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WITHDRAWN

# CAVALRY;

ITS

# HISTORY, MANAGEMENT,

AND

# USES IN WAR.

BY

J. ROEMER, LL. D.

LATE AN OFFICER OF CAVALRY IN THE SERVICE OF THE NETHERLANDS.

*WITH ILLUSTRATIONS.*

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The following pages were originally designed as lectures for a number of gentlemen, who, at the outbreak of the war, formed into a company, for the purpose of preparing themselves for the cavalry service, and who honored us with an invitation to direct their studies and exercises.

The vast proportions which the war has since assumed, the large increase of our cavalry, the general interest felt in whatever relates to the army, and, above all, the conviction which late events have forced upon the people, that henceforth they must no longer be unprepared for war, have induced us to modify our original plan, and present the subject in such a form as will render it more accessible, and interesting, we hope, to readers in general, as well as instructive to those who may have occasion to study it with professional interest or especial care.

The details of service are now prescribed in all armies by means of regulations, and these are so carefully framed, that, from the private soldier to the colonel of the regiment, all may

find therein their duties clearly specified and stated with the utmost precision; notwithstanding this, however, for the young officer who has suddenly left his peaceful pursuits to hasten to the defence of his country, and thus has scarcely had time to learn more than the merely theoretical parts of his profession, it must be exceedingly difficult to understand and appreciate the value of the prescribed movements, without some explanation of their practical utility and application on the field of battle.

It is in reference to this and other matters connected with the service that we have prepared the present volume, which is designed to exhibit in brief outline the leading principles of the art of war, and as much of military institutions as will enable any one, intrusted with the organization or management of cavalry, to discharge his duties correctly and intelligently; while it may also awaken a desire for further information, by referring to the several authors who have treated the subject at length, and of whose works we have endeavored here, in a small compass, to reproduce the substance.

To perform this task adequately would require talents to which we may lay no claim; it is only the urgent importance of the subject at the present moment, that has emboldened us to undertake what at other times we should certainly have left to some abler pen. For this reason, and in consideration of our endeavor to be useful to the many patriotic soldiers now in the field, by making them acquainted with what has been best said and written on the subject, we venture to hope that our attempt may not be unfavorably received, and that it will meet with the kind criticism of those whose long experience and superior abilities render them proper judges of its merit.

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# LIST OF THE PRINCIPAL WORKS

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# CAVALRY;

## ITS HISTORY, MANAGEMENT, ETC.

## CHAPTER I.

### INTRODUCTION.

"Zu allen Zeiten, wo die Kunst verfiel,
Verfiel sie durch die Künstler."—SCHILLER.

It has been often asserted, and not unfrequently even in military circles, that, owing to the recent improvements in firearms, Cavalry has lost its importance, and can henceforth perform only a secondary part on the field of battle. If this be so, we may reasonably expect that among the various powers, which have enlarged their experience during the late wars, and reorganized their armies accordingly, some at least have reduced the number of their mounted regiments, and applied the large sums requisite for their support to better purpose. On the contrary, however, we everywhere find the utmost attention devoted to the improvement of this branch of the service, and that, while the numerical proportion of cavalry to infantry has in no case been diminished, it has in some instances been largely increased. Thus France, which already maintained a numerous cavalry, amounting to one sixth of its army, has made no alteration in the number of its regiments,

but has so organized them as, in the event of war, immediately to raise their effective strength of 62,798 to 100,221, by calling out the men on furlough. Austria, which by the loss of Lombardy and the low state of its finances has been obliged to reorganize its army with a view to economy as well as to efficiency, has reduced its infantry by 30,000, but kept up its cavalry to 40,344, to be increased to 52,760 in time of war. Russia, which before the Crimean campaign had 83,653 regular cavalry, has, by an entire reorganization of this arm, augmented its strength to nearly 90,000, exclusive of its Cossacks, Calmucks, Bashkirs, Tunguses, &c., whose exact number is not known, but which certainly does not fall below 100,000. Prussia, which is energetically preparing to meet possible contingencies, has, like Austria, thoroughly reorganized its army, and increased its cavalry regiments from 38 to 48, forming a total of 29,957 men, which can moreover be strengthened by 12 regiments of landwehr in time of war; but as the several mobilizations to which this army has of late been subject have revealed the faultiness of all these temporary cavalry organizations, the Government has not hesitated to abandon a system which offered but doubtful advantages, and has decreed that the 12 regiments of landwehr cavalry shall be converted into 8 permanent regiments, thereby increasing its cavalry to 56 instead of 38 regiments, as it was before the war in Italy, and raising its effective strength to 33,945 men. England retains its 28 mounted regiments. Since the peace of Villafranca, Sardinia has increased its cavalry to 17 regiments. Bavaria, with a population of four millions and a half, maintains 10,280 cavalry. Compared with the infantry, its numerical proportion is as 1 to 6. In Würtemberg, this proportion is 1 to 4.9; in Saxony, as 1 to 6.5; in Hanover, as 1 to 4.8; in Denmark, as 1 to 5.6; and with all other secondary powers, on an average, as 1 to 6. Now it is scarcely credible that,

with all the talent they could command, assisted, too, by the counsel and advice of men illustrious in many battles, all these governments could have fallen into the same serious mistake; and that the only correct judgment on this important interest, can be found in the opinions of those who have examined it merely in the abstract, and who, on purely theoretical considerations, have pronounced cavalry to be no longer of use.

Before the Crimean war, cavalry generally enjoyed a good reputation, owing to the great services they had rendered during all the Continental struggles of the century. So when that war broke out, all eyes were fixed upon them, to see whether the modern improvements in firearms would leave them equal to their ancient renown. Unfortunately nothing there occurred to shed any light upon the subject. The English cavalry, indeed, were not very successful, but their ill luck can hardly be regarded as irrefragable proof against the general efficiency of cavalry in war. The charge at Balaklava has been severely criticised, and cited as a most hapless affair, which it truly was, if we except the heroic conduct of the men engaged in it. "It is grand," exclaimed Gortchakoff, "but it is not war." This, however, was not the only disaster in which the courage of the English soldiers and the incapacity of some of their leaders were exhibited; instances of both occurred, which were by no means confined to the cavalry. It has never been well ascertained by whom the order to charge was issued, and, as an isolated and unexplained fact, the failure of that charge proves absolutely nothing against cavalry. Assuredly, the blundering ignorance of some few artificers is no valid argument against the tools of their craft in general. During the same campaign, Marshal de St. Arnaud wrote to the Emperor from the battle field of the Alma: "Sire, if I had had cavalry, I would have obtained immense results, and Men-

schikoff would have been at this time without an army," just as Napoleon had said before: "If at the days of Lutzen and Bautzen I had had sufficient cavalry, I would have reconquered Europe."

But the strong basis on which the claims for a reduction of cavalry are now founded, is the limited service of this arm throughout the late campaign in Italy. A brief inquiry, however, will clearly show the reason. It has been at all times well understood that Lombardy is not the country for cavalry warfare. Neither the Austrians nor the Allies counted on this arm for victory. The proof of this may be found in the composition of their forces—the French having but fourteen, and the Austrians only eleven, regiments of horse. The celebrated campaign of 1796 should have caused more circumspection among the military commentators who, from this comparative paucity of mounted troops, would infer the low estimation in which they must have been held by the commanders of both armies. General Bonaparte, on commencing operations, had at his disposal only 2,500 cavalry. At the most critical moment, during the month of November, the reserve, under Beaurevoir, amounted to only two regiments of chasseurs and one of dragoons. In spite of this small number, what splendid feats were not accomplished by this army! It had come victorious out of fourteen pitched battles and seventy smaller combats; had taken five hundred field pieces, and made one hundred thousand prisoners. Surely, if any man was ever entitled to question the usefulness of cavalry, it was Napoleon. But, on the contrary, what do we see? So soon as he meditates the conquest of Germany, he bestows particular attention upon this arm, which he plainly foresaw to be capable of immense service to his designs. If, then, the critics of that time, like those of to-day, had built their conclusions on the actions of which the banks of the Po, the Adige, the Min-

cio, and the Adda were the scenes, they would certainly have fallen into a very strange error.

When the Emperor, at St. Helena, calmly looked back upon the twenty years of warfare which followed his campaign of 1796, he did not then change his conviction of the indispensable necessity of mounted troops. "The infantry of a state," said he, "being represented by one, the cavalry shall be one fourth, but for France one fifth will be enough, on account of its mountainous regions." Elsewhere he makes a special exception for Italy. Foreseeing its destinies, he computes what ought to be the armed force which it could support in case of a reunion of all its States into a single empire, and expresses himself thus: "Italy, by its population and its riches, can maintain 400,000 men of the different arms, independently of its navy. War in Italy requires less cavalry than in Germany; 30,000 would be sufficient:" that is, less than one thirteenth of its entire force, while he claims one fifth for France and one fourth for more level countries. What occurred in 1859 was therefore entirely consonant with the views of the elder Napoleon, expressed long before; and no one who knows Lombardy would ever think of entering it with an army encumbered with numerous cavalry; for its progress would be constantly impeded by rugged hills, by plains intersected by ditches, hedges, and vines, and by water courses which at certain seasons, and after an occasional storm, suddenly swell into rapid streams and torrents, at some places large enough to arrest the movements of an entire army.

Thus much for the small proportion of cavalry to infantry in the late Italian campaign. Let us now give a moment's attention to the rifled gun, which then first appeared, and which has since created the same alarm as firearms did at their first employment on the battle field, and at every subsequent improvement, inspiring anxious solicitude for the safety of caval-

ry, as though this arm were alone exposed to its destructive energies, and infantry had but little to fear from it. A letter dated Cavriana, June 28, 1859, which has gone the rounds of the newspapers, and which gives the first accounts of the terrible effects of rifled cannon, has made a profound impression. "At two thousand yards," says the writer, "the Eighth battery of the Sixteenth regiment having thrown into disorder a squadron of lancers, several batteries directed their fire at the same distance on twenty-five squadrons who were ready to charge, and put them to flight." This, indeed, is serious matter, and scarcely any further argument would be necessary to justify not only a reduction but even the total suppression of cavalry, if it were proven that thereafter the Austrian squadrons wholly disappeared from the battle field. The troops, however, against whom these terrible cannon thundered, belonged to Mensdorff's division, which until the very end of the engagement did not for an instant cease to brave the fire of its adversaries, not at two thousand yards' distance, but at close quarters, like gallant men. Several times they charged the right of General MacMahon, and confronted the Seventy-second regiment of the line, and Eleventh chasseurs, almost up to the muzzle. They arrived within two hundred yards of Vinoy's division of the corps d'armée of Niel, and were checked only by the grape and round shot of forty-two pieces of cannon belonging to the divisions and reserve of this corps. See "Official Reports of Marshals MacMahon and Niel on the Battle of Solferino." The same squadrons returned again in the evening, and did great service until late at night in covering the retreat of part of the army across the Mincio. At two thousand yards our sight does not easily penetrate the dense smoke on the field, and it is quite possible that, in the excitement of the moment, the correspondent may have mistaken for a rout what was merely a rapid change of posi-

tion. So, too, with the threatened charge. At two thousand yards cavalry does not yet commence the charge, for they would arrive in disorder, the horses out of breath, and incapable of vigorous effort.

The only real cavalry engagement that occurred during the war in Lombardy took place that very day. The Austrian horsemen, consisting of eight regiments, were separated into two divisions under Generals Mensdorff and Sedwitz. The former had taken position in the centre, between Cavriana and Guidizzolo; the latter at the extreme left, about six miles from Mensdorff, with the design of operating against the extreme right of the French. Early in the morning this division had already shamefully allowed itself to be driven back as far as Goïto, and took no further part in the conflict. Its chiefs were severely punished, cashiered, and condemned to imprisonment. Mensdorff alone remained to sustain the honor of his arm. The French cavalry, although more numerous than the Austrian, better commanded, and united into one body, was nevertheless from the very outset completely deprived of that independence of action by which alone cavalry is able to accomplish great things. The battle of Solferino, it must be remembered, consisted of a series of combats on a front extending from ten to twelve miles. Each corps of the Franco-Sardinian army had to fight wherever it met the enemy. Hence combination of movement became extremely difficult. Between the corps of MacMahon and Niel, in the most open and accessible part of the ground, there was a wide interval through which the enemy, preceded by Mensdorff, could penetrate and cut in two the army of the Emperor. This had to be filled up at all hazards, and, for want of available infantry, the French made use of their cavalry. Formed in three divisions, under Morris, Desvaux, and Partouneaux, it took up its position in the first line between the Second and the Fourth corps, and by well-timed

charges protected the wings of their infantry, constantly threatened by the Austrian cavalry, and foiled the attacks which Mensdorff several times attempted in the presence of squadrons three times as numerous as his own. Controlling circumstances prevented both parties from obtaining such successes as might justly have been expected from large bodies of cavalry, had they been free to develop all their resources to the full extent of their capability. Neither rifled guns nor cannon had anything to do with this.

Elsewhere we shall have occasion to examine the qualities of these new engines of destruction, and the extent to which they are likely to affect the usefulness of cavalry; for the present let it suffice to remark that the question has been promptly resolved by those most interested in it. For all investigations to ascertain whether the recently-tried effects of the modern firearms justify the opinion that mounted troops will henceforth be unavailing, concur in the conclusion that hereafter cavalry will be more indispensable than ever, and that nothing should be neglected that can render it still more efficient, by either mounting it on better horses, or developing the individual instruction of the soldier, or by both.

If, then, we cannot dispense with cavalry, the question arises, What shall be its numerical proportion in an army? In order not to be suspected of undue preferences for this branch of the service, we will refer the reader to a work recently published, "Die Kavallerie der Jetztzeit; ihre Bedeutung, ihr Gebrauch und Stärkeverhältniss zu den anderen Waffen. Leipzig, 1860." The author highly favors a limited cavalry, and develops his theory with no small ability. Those who think lightly of cavalry will find in his work a whole arsenal of quotations and arguments in support of their views. But our German theorist is also a practical man, who is not satisfied with pulling down existing institutions without reconstructing in

his turn, and giving positive shape to his ideas. Accordingly, in his opinion an army of 200,000 men should always number, in an intersected country like Italy, 18,000 mounted troops, and everywhere else 22,360. But as an army of 200,000, after deducting cavalry and artillery, contains not more than 160,000 infantry, it follows that here, too, the proportion of cavalry is as 1 to 7, or nearly the same that we have found it everywhere else.

Such proportions, however, can express only a relative approximation, for in reality they depend on local and transient circumstances, and must remain subordinate not so much to the numerical force of the infantry as to the nature of the country and people among whom the cavalry is to be raised, to the character of the country which will be the theatre of war, and to the kind of troops likely to be encountered. But what, above all, should be taken into consideration, are the difficulties and delays that unavoidably attend the formation of mounted regiments. It is these which compel the peace establishment of cavalry to be maintained upon a much larger scale than that of infantry. Newly raised squadrons can be of little service in the field, indeed may do much mischief; and when we reflect that it requires threefold more time to teach a man to ride and have a perfect mastery of his horse than to teach a foot soldier his complete drill, and that when the horse soldier is thus far instructed he has still a vast deal to learn before his education is complete, it becomes evident that the hurried augmentation of cavalry forces should be scrupulously avoided. A regiment of infantry may be speedily increased without greatly impairing its usefulness in the field, by incorporating a certain number of recruits, most of whom have probably served already in the militia; but a few half-drilled horsemen, a few unbroken horses, will throw a whole line into disorder, and mar every effort of the most able commander.

Opinions vary respecting the mode in which the state should provide for its external safety. To the popular mind the subject of national defence is generally suggestive of forts and heavy guns; but the science which determines their location, form, and construction, the skill required to hold them, the art to make them subserve their purpose in the general conduct of a war, are rarely associated therewith. Nor does a long period of uninterrupted peace and unchecked prosperity conduce to raise the art of war in the public estimation, and foster a martial spirit among the people. Wealth and fancied security are apt to beguile them into a neglect of their military resources and a disregard of their importance. And in the absence of a clearly-defined knowledge of what really constitutes a military establishment, they readily believe that with a numerous militia and easy communications, they can collect a powerful army at a few days' notice. But says Scott, "If the people of the United States suppose that the facilities which our railroads offer, enable us to concentrate large masses of men in a short period, the answer must be, that Discipline is the soul of an army, and that, without the habit of obedience, an assemblage of men in battle can never be more than a panic-stricken mob. Instances in our history are not rare to verify this truth. The fields of Princeton, Savannah River, Camden, Guilford Court House, &c., during the war of the Revolution, not to speak of later disasters, amply sustain the declaration of Washington, that such undisciplined forces are nothing more than a 'destructive, expensive, and disorderly mob. When danger is a little removed from them, they will not turn out at all. When it comes home to them, the well affected, instead of flying to arms to defend themselves, are busily employed in removing their families and their effects; while the disaffected are concerting measures to make their submission, and spread terror and dismay all around, to

induce others to follow their example. Daily experience and abundant proofs warrant this information. Short enlistments and a mistaken dependence upon our militia, have been the origin of all our misfortunes, and the great accumulation of our debt. The militia come in, you cannot tell how; go, you cannot tell when; and act, you cannot tell where; consume your provisions, exhaust your stores, and leave you at last at a critical moment.' Such facts, bringing powerfully home to us the contrast between indiscipline and discipline, it is hoped may yet cause our countrymen to heed the admonition of the Father of his Country, that in peace we must prepare for war." A brief review of what is the foundation on which a system of national defence is constructed, may, therefore, be deemed here not out of place.

All organized societies rest on systems of principles and laws which mould their institutions. These, harmonizing with each other and with the character of the people, its traditions, its religion, climatical influences, &c., constitute the national economy, and may be divided into, first, Political Institutions, which comprise the laws, customs, and usages by which the different forms of government are expressed; secondly, Civil Institutions, which formally incorporate the laws and practices that control the administrative and judicial relations of the citizens, both among themselves and with their government; thirdly, Religious Institutions, which embody the laws and precepts that regulate the various modes of worship; and fourthly, Military Institutions, which include all principles, laws, and provisions for the organization and direction of the public force in view of war.

However we regard war, whether desiring or shrinking from it, whether as Rome, aspiring to conquer the world, or as Sparta, content to maintain our independence and repel invasion, the art of directing military operations is always of the

utmost importance. All nations have accounted it so; all have felt that the military art is fundamentally connected with the deepest interests of society; that agriculture, commerce, industry, and the fine arts never flourish long without its protection; nay, that their very existence and that of government itself ultimately depend upon it. This will explain the distinguished honor universally awarded to great military leaders, and the immense sacrifices which states have enthusiastically made for the support of their military institutions.

Now, these are as susceptible of improvement and progression as all other social institutions, and like that of all others, their progress should be gradual and slow, because stability is necessary to sustain confidence. In order to thrive, they require constant attention; the least neglect is soon perceptible, and their degree of perfection or defectiveness is perhaps the most unerring test of the perpetuity, power, and influence of a country. "Every one," says Machiavelli, "desires the alliance of a nation that has distinguished itself in war; every one endeavors to avoid coming into collision with it."

The military institutions of the Greeks and Romans were wisely conceived, carefully conducted, and in perfect harmony with their political institutions. We find among them principles of organization, methods of recruitment, means of discipline, modes of rewards, systems of instruction and administration, nearly corresponding with our own. But with the decline of Rome began the decay of ancient military art. The barbarians who overran the empire had neither organization nor discipline. With them the whole nation, or rather the whole tribe, went to combat. The old men, women, and children, all participated in the campaign, attending the camps and looking after the booty. In feudal times, the baron summoned to his banner his men-at-arms and vassals. He led them to the rendezvous designated by his suzerain; each man took with him

fifteen days' provision, and thus was a force collected. In combat, the panoplied knight fought the heavy battles, whilst the low and despised foot soldier kept himself alert to pillage or to flee. Charles VII of France was the first to establish a standing army. From his day, a gradual improvement took place in all countries, to the time of Louis XIV, under whose care was developed a system of national defence, which, imitated by other monarchs and further perfected during the wars of the Republic and the Empire, has become the model of all modern military institutions.

The study of these institutions may be suitably divided into seven parts, founded on the following considerations:

First. There is at present no nation without a certain number of men permanently under arms; that is, without a standing army, in order to be ever ready for public emergencies.

Second. Behind the standing army there is a code of national ordinances, directing the mode in which all men in the age of vigor and manhood shall participate in the defence of their country.

Third. To keep the ranks complete, a system is needed to regulate the manner of recruitment and discharge.

Fourth. A proper scheme of training and instruction is required to bring the troops to the highest degree of efficiency for the purposes of war.

Fifth. To make all obey a single will, demands a strict and correct discipline, unattainable without a settled method of promotion and reward, and a definite system of military judicature.

Sixth. To keep in good condition the military wealth of a nation, such as arsenals, workshops, barracks, stables, hospitals, &c., requires the supervision and direction of science.

Seventh. To provide for the wants of all, and for the general support of the military establishment with due

economy, and without exposure to fraud and corruption, a sound system of administration is needed, which must be as carefully organized as any of the foregoing arrangements.

For the present we merely glance at these topics, as they belong to subjects to be inquired into at large in subsequent chapters, and proceed to offer a few remarks on standing armies, and the considerations which determine their numerical strength, that we may elicit the data on which we can calculate with some precision the number of men and horses which ought to compose the regular cavalry.

We are aware that the idea of a large standing army is in nowise popular in this country; yet, however strong may be the aversion to its permanent establishment, no one will deny that the art of war must be cultivated at least by some citizens, who make it their special business to study its progress in other nations, and to practice it at home with a given number of men, who serve as a nucleus both for instantaneous action, and for the military instruction of that class of citizens who are capable of bearing arms, and whose honorable and important province it is, to hazard fortune and life for the preservation of their country. But, however great may be the proficiency of the latter, it is impossible for them in time of peace to acquire the skill and knowledge essential to a soldier; and it seems beyond doubt that a state which should place its whole dependence on an establishment of militia, may be overcome by any well-supported conqueror in a single masterly campaign. It is war alone that perfects this description of troops, and history proves that only after years of destruction, anxiety, and alarm, can they acquire the necessary discipline and skill, and create that glowing heroism, which finally produces great results.

During the seven years of war that Napoleon waged in Spain, his troops gained their battles against the Spaniards,

but lost most of those fought against the English. Yet the Spanish troops were national, full of patriotism, often fanatical. They fought for the independence of their country, and were inflamed with hatred against the French. The English armies, on the contrary, were composed of troops of all nations, and for the greater part of mercenaries. Now, if the unaided exertions of the Spaniards were insufficient to withstand the armies of Napoleon, the government, not the people, was to blame. It was not the want of heart, but the want of head, which brought disaster on their contest with the armies of the Emperor. "The officers," writes Alison, "were a conceited, ignorant, and inefficient body, while the men were almost always excellent, and possessed not only the moral spirit, but the physical faculties, to become the basis of a first-rate army. The Catalonian Miguelets, or smugglers, formed the finest materials for light troops, and the Valencian and Andalusian levies presented a physical appearance exceeding that of both the French and English regular armies. But how were these admirable materials applied? Instead of discipline, system, order, in which alone consisted the superiority of their foe, not the smallest measure of prudence or precaution was perceptible on the part of the government, and so completely had the idea of their own invincibility taken possession of their minds, that they never once contemplated the possibility of defeat. All their arrangements were based on the assumption that they were speedily to drive the French over the Pyrénées. Nothing was foreseen or provided for in case of disaster. There were no magazines or reserve stores, no fortified positions, no armed fortresses, and no money in the treasury. When the contest began in 1808, the soldiers were naked, without shoes, and rarely supplied with provisions; the cavalry were dismounted, the artillery in wretched condition; even the liberal supplies which had been sent from England were squandered

or dilapidated by private cupidity, and seldom reached the object of their destination. The inferior officers sold or plundered the stores, the superior made free with the military chest; the central junta, instead of applying their minds to practical objects, occupied themselves with discussing the honorary titles which they were to bear, the salaries which they were to receive, and the uniforms in which they were to be attired, and thus materials out of which a splendid army might easily have been formed, became comparatively useless, amid the mass of vanity, venality, and cupidity with which they were allied." Patriotism alone is no security against foreign invasion, nor by itself a sufficient means to repel it. The patriotic Romans were often beaten on their own soil by the Carthagenians; the Athenians yielded to Philip; Greece fell before the Turks; the Poles, excited to the highest degree of enthusiasm by the patriotism of Kosciusko, in vain resisted the well-disciplined battalions of Suwaroff.

Indeed, a well-regulated standing army is the only solid protection of a state. A nation may have reached the very height of civilization; it may possess all the advantages of a fertile soil, an extensive commerce, and great riches; it may enjoy every luxury that art and industry can procure; but of what avail are these, if it is not always prepared to defend them against the incursions of other nations more powerful, poorer, or more turbulent than itself? These may suddenly break in and devastate, as the barbarians burst upon the lower empire and laid waste Rome and Constantinople. A standing army is as necessary now to defend the existence of a whole people, as a single weapon was to primitive man to defend his individual life. A nation may not desire war, but should always be prepared for it, for thus will it most effectually secure respect for its rights, its power, and its dignity.

The necessity of watching over the execution of the laws,

and of maintaining the social order, is also no unimportant reason for keeping up a standing army. The people, it is true, have their rights theoretically guaranteed to them by their Constitutions, and they may quietly act within the constituted limits of these rights; but whensoever they impatiently transgress them, to the certain detriment of others, they must be repressed, otherwise the public peace would be constantly threatened, and the safety of the whole country imperilled. It is said that a large standing army may become an instrument of despotism. Perhaps so, if composed of hirelings; but never, if it be a national army, individually emanating from the bosom of the people, and statedly returning thither again by regular and legal liberations. Drawn in like proportions from all parts of the country, such an army could not but desire its universal good. The sympathies of such soldiers would always be with those to whom they are connected by domestic ties, and these, in turn, would take in them the liveliest interest. An antagonism of caste between officers and men would never arise, and citizens and soldiers, as brethren of the same family, would be united in the defence of their common country, in whose general welfare they are all equally interested. Nor let it be supposed that conscription is incompatible with republican institutions; on the contrary, it is the only mode admissible among freemen. "Every state," says General Knox, "possesses not only the right of personal service from its members, but the right to regulate the service on principles of equality for the general defence. If people, solicitous to be exonerated from their proportion of public duty, exclaim against the only reliable means of defence as an intolerable hardship, it cannot be too strongly impressed upon them, that while society has its charms, it also has its indispensable obligations: that to attempt such a degree of refinement as to exonerate members of the commuunity from all personal services, is to render them

incapable of this exercise, and unworthy of the character of freemen."

As an object of calculation, the effective force of a permanent army must be considered both in its minimum and maximum. The former is sufficient when the state enjoys profound peace, and has nothing to fear, either from its neighbors or from internal dissensions, revolts, or insurrections; the latter is required when it is engaged in war with a nation of about equal power; for in extreme cases, such as a coalition of hostile states, or when the country is in great imminent danger, all men capable of bearing arms are expected to come forward. However, from the very character of the circumstances, their services are then but temporarily required, and hence no provision is made for them in the regular army. The minimum is calculated, first, on the nature of the occupations the people are engaged in, for it has been ascertained that it is more difficult to recruit an army in industrial than in agricultural districts; secondly, on the moral and physical qualities of the nation, its aptitude for war, its military spirit, the character of its militia, and the degree of dependence that can be placed upon them; thirdly, on the extent of the boundaries, and the facilities they offer for defence; fourthly, on the military establishments of neighboring powers, their political tendencies, and the necessities of inspiring them with respect; fifthly, and lastly, on the condition of the country's finances, it being well understood that a national army raised by conscription is vastly less costly than one composed of volunteers. In view of all these considerations, the standing armies in Europe contain between a sixtieth and a two-hundredth part of the population; a hundredth being the average required by the leading military powers, France, Austria, and Prussia, as a quota, in nowise burdensome to the people. In Russia it is somewhat larger, owing to its immense territory and the difficulties of intercom-

munication. It is somewhat smaller in England, on account of its geographical position, and the power of its navy. This proportion, moreover, varies according to circumstances, and is annually determined in absolute monarchies by the sovereign, in constitutional governments by the legislature, as necessity or prudence may require.

The maximum is calculated on the minimum. The former represents the effective force of the army in time of war, with full tactical units, say 100 men per company, 800 per battalion, or such other number as may be determined by army regulation. The latter exhibits the force to which such units may be reduced without inconvenience, in time of established peace, say 50 or 60 men per company, 400 or 500 per battalion, or in this ratio throughout the army. As below this number the troops can no longer be instructed or maintained to advantage, the proportion of maximum to minimum becomes somewhat less than 2 to 1, say 5 to 3, which is the average ratio in European armies. The practical application of this is, that a population of 20,000,000 can keep a standing force of 120,000 soldiers, to be increased almost at a moment's notice to 200,000 well-trained and thoroughly instructed men, by drafting into the army every year only 1 man per 500 inhabitants, nominally continuing him five years in service, though really allowing him leave of absence on open furlough during the last two, subject to the call of Government.

Such an army, composed of honorable and respectable citizens, would cultivate in its midst the highest civil and military virtues, and restore annually to private life a number of men, who would diffuse throughout the whole nation correct notions of discipline and sound military principles, and renew among the militia such army traditions as would otherwise degenerate and finally die out after a long term of peace and prosperity. It is only thus, with a regular army for the offensive, and a

strongly organized militia for the defensive, that a country can competently assert its power, and bring at any time into the field a force which renders its friendship desirable and its displeasure fearful.

We have already noticed the conclusions which both theory and practice have reached respecting the numerical proportion of cavalry: it yet remains to be stated that in most European armies, this proportion is calculated on an effective force lying somewhere between the maximum and minimum; both on account of the horses, whose number must be kept as nearly complete as possible, and for the constant practice which the men require to maintain their efficiency. It is for this reason that, in armies raised by conscription, inducements are held out to the troops to forego their right to furloughs, and that enlistments and re-enlistments are more common in cavalry than in infantry. Their valuable service in time of war presupposes a very careful organization, which must be the result of time and constant labor; for so numerous are its details, so complex and diversified the instruction of its officers, so slow and difficult the training of men and horses, that it would be dangerous to trust to regiments suddenly collected on the outbreak of a war. The necessity, therefore, of keeping up a strong and well-trained cavalry in time of peace is generally acknowledged, even by those who are of opinion that a state can exist with defensive means only.

Another consideration, somewhat novel in this country, and far more perplexing than the preceding, is whether preference shall be given to light or heavy cavalry; or shall there be but one sort, and that cavalry proper or mixed, serving both on foot and on horseback; or shall we have all kinds, and, if so, what shall be their proportion? In order to answer these several questions, we must first observe that progress in gunnery and changes in the organization and tactics of infantry, have

always called forth corresponding changes and improvements in the instruction, mode of fighting, and tactics of cavalry. It is clear, therefore, that some modifications are necessary for the latter, that it may keep pace with the recent improvements in infantry and artillery practice.

Speed and dexterity will more than ever be required as paramount qualities in cavalry, and although all mounted troops, cuirassiers as well as hussars, are at present taught to manœuvre at all gaits, it is nevertheless true that heavy cavalry, though more solid as a mass, and producing a more powerful shock, is neither as ready and active, nor as nimble and impetuous as light cavalry. It is therefore evident that more light than heavy cavalry will be needed hereafter; but experience has not yet sufficiently confirmed the speculations of theory to determine the exact proportion of the two kinds; and certainly it would be quite premature and even perhaps imprudent to abolish lancers and cuirassiers, since nothing has yet occurred to prove that they are not as useful in great cavalry engagements now as ever they were before. Such, at least, seems to be the opinion of most writers who have given this subject their serious attention, and we find it practically concurred in by the leading powers of Europe, in the composition of their armies.

The author of "Die Kavallerie der Jetztzeit, etc.," who proposes 22,360 cavalry to an army of 200,000 men, fixing the maximum of his squadrons at 130 horses, divides his cavalry into 40 squadrons of cuirassiers, 32 of cavalry of the line, and 100 of light cavalry, making 172 squadrons. This comports very nearly with the views of Napoleon I, who to 36,000 infantry apportioned 9,000 cavalry, divided into 4,200 heavy and 4,800 light. France, which has not yet been prompted to introduce changes on account of late events, has now 1 squadron of cent-gardes, 12 of carabineers, 6 of guides, 72 of cuirassiers,

78 of dragoons, 54 of lancers, 48 of hussars, 78 of chasseurs, 18 of chasseurs d'Afrique, and 18 of spahis—385 squadrons in all. Austria has 72 squadrons of cuirassiers, 12 of dragoons, 88 of hussars, and 80 of lancers, making 252 squadrons. Prussia has 4 squadrons of life-guards, 40 of cuirassiers, 80 of lancers, 48 of dragoons, and 76 of hussars—a total of 248 squadrons. Without exact details of Russia, we know that, while it is thoroughly reorganizing its cavalry, it retains its 24 squadrons of cuirassiers of the guard, and that it counts, in all, 108 squadrons of heavy cavalry, and, we believe, 334 of lancers and hussars. After the peace of Villafranca, when the rifled cannon had proclaimed its power, we might suppose that the Sardinian generals, instructed by experience, would do away with heavy cavalry. But not so. Sardinia, which made the campaign with only 9 regiments of cavalry, has increased the number to 17, now composed of 4 regiments of cuirassiers, 6 of lancers, 5 of light horse, 1 of hussars, and 1 of guides. Spain has 4 regiments of carabineers, 4 of cuirassiers, 6 of lancers, 4 of chasseurs, and 3 of hussars. The United States, though not yet possessed of heavy cavalry, seem to contemplate the creation of cavalry of the line and heavy cavalry, as may be inferred from "The Revised Regulations for the Army, 1861," in which even a place is assigned to each sort, light, line, and heavy, both on parade and in order of battle. (Art. xxxvi, § 480.)

Not a little has been said of late about the reforms which are needed in cavalry; but as in most cases, so in this, the innovators, in their zeal to correct certain abuses, have often fallen into others equally extreme. Dazzled by the brilliant exploits of light cavalry, and convinced of the growing importance of the part it has to perform in modern warfare, they seem to have lost sight of the immense services heavy cavalry has rendered in circumstances such as may readily occur again. They have supported their arguments by all the instances on record, in

which light cavalry has had the advantage over heavy, and ignored the far more numerous examples in which an encounter between heavy and light cavalry has resulted in the total discomfiture of the latter. Doubtless they are honest in their convictions. Most of them are zealous light cavalry officers, with heart and soul intent on the advancement of the arm of their predilection, and hardly admitting the possible improvement of any other; but substituting fervid inclination for cool judgment, they have concluded that henceforth there is need for but that one kind of cavalry, and that the one in whose welfare they are so particularly interested. Their notions, however, are by no means novel; they were entertained long before the introduction of rifled firearms. Nearly a century ago they originated in Germany; they next found their way into France, and lately into England; but that they have never convinced any one, is abundantly proven by the foregoing statistics.

Some eighty years ago General Warnery wrote a highly interesting work on cavalry, in which certain reflections occur on the heavy troops of that time. These passages have been carefully collected, and are constantly quoted, though not always fairly, by those who think that heavy cavalry should be entirely abolished. Great stress is laid on a sentence in which the author states that Seydlitz admitted to him that after a long march, his regiment of cuirassiers would not be able to resist six hundred good hussars. It is not probable that Seydlitz, if he made the remark, designed any comparison or a general acknowledgment of the superiority of light to heavy cavalry. Certainly, there is nothing which proves that he ever thought of converting his own cuirassiers into hussars; on the contrary, we know that he prized them very highly, and worked wonderful execution with them, as at Zorndorf, for instance, where, under his lead, they took several batteries. Indeed, General Warnery's work, otherwise so excellent, is not

altogether free from inaccuracies of statement and quotation, and therefore it may with propriety be suggested, that some caution should be used in its perusal.

In confirmation of this, we will notice a passage often quoted as an argument against heavy cavalry, in which the author speaks of those bands of mercenaries, known under the names of Stradiotti, Estradiots, Albanian or Greek cavalry. "It was in the fifteenth century that the Albanians made their appearance in the Venetian armies; the other powers also took some into their service. They were called Greek cavalry, being composed of Levantins, Greeks, Albanians, Bosnians, Croats, Dalmatians, and Macedonians, like the Arnauts among the Turks. They wore no defensive armor, but used only javelins, curved swords, and battle axes. These Albanians served in the field very much as the hussars of our own time (1781); and when they had the good fortune to throw the gendarmerie into confusion, they made great havoc among them; for in the mêlée these heavy horsemen could make no use of their lances, and hardly move about. A fact apparently incredible, but nevertheless very true, is that the Swiss foot, armed simply with pikes and halberds, attacked and defeated the gendarmerie in the plains. This really occurred at Novara, when the French gendarmerie was almost entirely destroyed, and makes me somewhat doubt the extraordinary valor which until now has been attributed to them." "After the battle of Novara," he continues, "Francis I became disgusted with cavalry, believing that it was useless against infantry armed with pikes and arquebuses, &c., &c."

The compliment bestowed on the Swiss is natural, as the author himself was a Swiss by birth, afterward in the service of Prussia, and later still in that of Poland; but their great slaughter of the French gendarmerie appears indeed so incredible, that a little historical investigation may not be superfluous. The General places the battle of Novara under the reign of

Francis I, whereas it occurred under that of Louis XII, June 6th, 1513—the former monarch not ascending the throne until the first of January, 1515. According to the "Mémoires de Du Bellay," vol. i, p. 21, the French had on the battle field less than three hundred gendarmes, of whom he gives the details per company. At the commencement of the action, one hundred made a charge and cut down the enfants perdus of the enemy. The battle of Novara was an infantry affair, and the ground, intersected with hedges and canals, was very unfavorable to cavalry; still, they might have been used to greater advantage. The lansquenets in the French service sustained severe losses, but behaved bravely. "As to the gendarmerie," says Marshal de Fleuranges, "not one was lost." This marshal, then a young captain in the lansquenets, was on that occasion severely wounded, and remarks that he was saved only "because the enemy dared not attack the gendarmerie." ("Mémoires de Maréchal de Fleuranges," pp. 147, 154.) It was his own father, Robert de la Marck, duc de Bouillon, who, learning that both his sons were wounded, rushed at the head of a squadron of gendarmes into the midst of the Swiss battalions, bristling with pikes, and rescued both, without losing a single man. (See "Mémoires de Brantôme," vol. ii, p. 275; "Mémoires Du Bellay," vol. i, pp. 23, 24; and "Histoire des Guerres des Français en Italie," vol. i, pp. 495, 496.) "This fact," remarks the author of the last work, "proves of what importance it would have been to afford the gendarmerie the means of closing with the enemy, and it should not escape the reflection of those who seek to determine which of the two arms, infantry or cavalry, has a real superiority over the other."

These evidences certainly do not agree with Warnery's statement, and it would seem that Francis I had no occasion to be "disgusted" with his gendarmerie, as assuredly he had not two years later at the battle of Marignan, which lasted two

days (September 13th and 14th, 1515), and of which Marshal Trivulcio, who had been in eighteen engagements, used to say that "this was a battle of giants, whilst the others were only child's play." The Swiss lost there from fourteen to fifteen thousand men. The second day "the French gendarmerie charged, and so completely broke them up, that toward nine o'clock in the morning they commenced their retreat, leaving almost half of their army on the field of battle." ("Histoire des Guerres des Français en Italie," vol. ii, pp. 69, 71; "Dictionnaire des Siéges et Batailles," and the various memoirs above quoted.) It was at the battle of Pavia, Feb. 24, 1515, that the French gendarmerie really suffered, but not from the Swiss, who were then on the French side. Still, it seems that the disaster, of which the reckless courage of Francis I was the first cause, did not "disgust" that monarch with his gendarmerie, for a few years afterward, in 1532, when Charles V asked him, by way of a loan, for a certain sum of money and this magnificent corps to help him in repelling the Turks, who were giving him some trouble, his answer was, "As to the first part, I am no banker; as to the other, since my gendarmerie is the arm which bears my sceptre, I never expose them to peril without being myself with them in search of glory." ("Dictionnaire Militaire," ed. 1758, article Gendarmerie; "Mémoires de Langley," vol. ii, p. 200; "Mezeray," vol. iv, p. 571, ed. 1688.) So much for the annihilation of French gendarmerie by Swiss foot soldiers: now for the Albanians.

"Philippe de Comines," says General Warnery, "mentions that in his time, when the French and Venetians blockaded Verona, defended by the troops of the Emperor Maximilian, a party of Albanians sallied from the place and skirmished with the French gendarmes, and that each Albanian took one of the gendarmes prisoner and led him into the town in triumph." This at least is plain; each Estradiot caught one

French gendarme, and brought him home alive; one apiece. The number excites suspicion, but let us see. Philippe de Comines is certainly a great authority, and if he so records it, we can only be sorry for the French. The truth is, the passage is nowhere to be found, and the author would have been much embarrassed to point out the page which contains the reputed fact that he relates. In mentioning the Estradiots or Albanians, de Comines states that they somewhat amazed the French, who did not know them yet, and who saw them for the first time a few days before the battle of Fornova, gained by Charles VIII, in 1494; that they occasionally killed a few Germans in the French service; that, according to their custom, they cut off their heads, for each of which they received one ducat; that they were dreadfully afraid of artillery; that once, the shot of a falconet having killed one of their horses, they immediately took flight; and that "twenty men-at-arms with their archers would always be a match for two hundred of them." ("Mémoires de Philippe de Comines," vol. i, pp. 647–655, ed. Godefroy, 1714.) And as to their taking French gendarmes prisoners, let us read what Brantôme relates, vol. ii, p. 304: "At the siege of Padua, in the year 1509, when the French, commanded by La Palisse, were united with the troops of the Emperor Maximilian, a singular affair occurred. Chevalier Bayard had in his company of gendarmes a young man of sixteen years, named Boutières; this youthful warrior having engaged in a hand-to-hand fight with an Albanian officer of the light horse of the enemy, made him prisoner, and brought him to the Emperor. Surprised at their disproportionate strength, this prince remarked to the Albanian that he was astonished that so huge a colossus had allowed himself to be taken by a child, who would not have a beard for four years to come. The Greek, more ashamed of the reproach than of his defeat, replied that he had yielded to numbers alone, having been

seized by four horsemen. Bayard, who was present, turned to Boutières, and said, 'Do you hear that? It is contrary to your statement; this concerns your honor.' Boutières, looking like a thunderbolt at his captive, exclaimed, 'You lie! and to prove that I alone have taken you, let us mount again, and I will kill you or make you cry mercy a second time.' The Albanian did not wish to fight again. 'Boutières,' then said Bayard, 'you have begun as splendidly as ever young man did; go on thus, and you will one day become a great personage!' This prophecy of the French hero was verified, and Guignes-Guiffray, Sieur de Boutières, became a famous chieftain." He was lieutenant-general under Francis I.

Furthermore, if the Estradiots did not wear defensive armor, it was not because they prized it little, but because they could not afford it; for, according to Warnery himself, in 1517 they commenced to put on cuirasses. And as to the comparative merit of heavy and light cavalry, the General expresses himself thus: "According to rule and the nature of this arm, cuirassiers, gendarmes, and other corps of cavalry mounted on large horses and protected by defensive armor, must fight in the first line, for which reason they are kept in reserve and rarely employed elsewhere. The height of both man and horse must naturally give the advantage in the shock, on the supposition that it occurs fairly, squadron against squadron, and for both sides with equal impetuosity." Respecting the capabilities of heavy cavalry, he remarks that "Seydlitz had put things on such a footing, that the cuirassier can act like the hussar, and the latter like the former; nimbleness, order, attack, rally, all are now the same for both." Surely, then, General Warnery is not very bitter against heavy cavalry, and indeed, as a personal friend and admirer of Seydlitz, that could hardly be expected of him. As his remarks on gendarmes, even were they correct, relate to an epoch some three centu-

ries and a half past, they evidently can have no direct bearing on the subject.

After the war of the Empire with Russia, General Morand wrote a work on cavalry, in which he appeared as a champion of light horse. He had been struck with the indefatigable activity of the Cossacks, and the facility and suddenness with which their numerous bands made their attacks, quickly disappeared, and even more quickly returned as soon as danger had passed. They allowed their enemies not a moment's rest, and found abundance where the latter almost famished. In forward marches, they turned the columns, and their intrepid scouts braved the very lines of operations. In the retreat, they flitted in front of the vanquished, harassed them on every side, carried off the wounded and stragglers, and even whole trains and detachments. Carrying his imagination back to the times of Gengis-khan, General Morand asked himself whether such masses of fearless soldiers, finding everywhere a subsistence for men and horses, bearing with them all that belonged to them, could not again make similar conquests; and in his enthusiastic zeal he wished France also to have Cossacks. But his scheme was only a fond delusion. The Cossack exists in Russia alone, and both he and his horse are born and bred on the interminable steppes of his country. The Seine and the Loire are not the Don and the Volga, and the Norman horses cannot be taught to plough the snows for pasture.

More reasonable was the plan of Colonel de Noé, who, impressed with the recent exploits of the chasseurs d'Afrique, wished all the French cavalry to be organized and trained as the former, and, like them, mounted on Barb horses, which are now esteemed the best for war. After enumerating the splendid qualities of these African regiments, he says, "It is toward Africa that we must turn our eyes if we wish to know how such results have been obtained, and how they are to be kept

up. It is there that, even in the midst of peace, is maintained the habit of those arduous exercises that place the chasseurs d'Afrique on a level with the Arab horsemen." But here again the practical question arises, How long must a regiment be under training, to establish habits firmly enough to remain traditional with them after their return to France? Moreover, will they at home be favorably situated for the practice of the principles they have acquired among the Arabs? Besides, let us suppose that all the three hundred and eighty-five squadrons which France now possesses can be mounted on Barb or Arab horses, which is very doubtful: will these retain their native qualities in all the cavalry garrisons of the French empire? Suppose, further, that in order to train men and horses, all regiments in rotation must be sent to Africa: can this effect the purpose? France now keeps eighteen squadrons of chasseurs d'Afrique in Algeria. Let this number be increased to forty, fifty, or even sixty, and let them remain there three years, which certainly is not too long to acquire settled habits; then the turn of every regiment will occur once in twenty-one or twenty-four years. By that time, horses and men will all have disappeared, and everything will have to be commenced anew. We enter into these details to guard our readers against the specious arguments of certain reformers, who, though deserving credit for having stirred up some new ideas, are nevertheless blamable for not having tried the worth of their projected amendments by the test of practical common sense. We are confident that there is no government which would not rejoice to possess a cavalry such as Colonel de Noé proposes, though we are equally sure that none will ever see his ideal realized.

Another work on the same subject, and with similar tendencies, which has been more generally read in this country than Colonel de Noé's, is that of Captain Nolan. In order to understand the aim and object of his work, it should be known

that the English cavalry consists of twenty-eight regiments, divided into cuirassiers, heavy dragoons, light dragoons, lancers, and hussars; but that in reality all these regiments, by composition as well as by training, are to all intents and purposes heavy cavalry, and differing little in the size of men and horses. "More than one half of our lights," our author remarks, "are really heavies, and would be considered so in every other European army." Now, with considerable experience in the late wars in India, and a more than cursory acquaintance with the cavalry of other nations, he saw England's shortcomings, and called loudly for reform. He was the first who fell in the disastrous charge at Balaklava, and his country lost in him a gallant officer. His efforts against hereditary routine are exceedingly creditable, and although we fear that enthusiasm urged him too far in some instances, yet as earnest suggestions in behalf of progress and improvement were needed in England, we have no doubt that his work will be productive of much good in that country.

The author is wholly in favor of light cavalry, and uncompromising in his dislike to cuirassiers; and since he had particularly in view the reform of the English, who are the heaviest of all heavies, it was perhaps his wisest course to make out a very strong case, considering all the difficulties he had to encounter. But before demanding the unconditional suppression of cuirassiers, he might first have tested their capacity for improvement, and ascertained whether steel or mail clad horsemen are of necessity devoid of that nimbleness and rapidity so essential in cavalry. The extract from a letter of General Sir Charles Shaw, which he quotes, and which gives some interesting details of the Circassian cavalry by a Prussian officer, contains valuable hints to this effect, and is worthy of an attentive perusal.

This officer tells us that "the Circassian wears a pointed

steel helmet with a long horsetail pendent from it; a net of steelwork hangs down from the lower part of the helmet, protects the front and nape of the neck, and is looped together under the chin, underneath a short red vest, cut in the Polish fashion. He is clad in a species of coat of mail, consisting of small bright rings of steel intervened. His arms from the wrist to the elbow, and his legs from the foot of the shinbone to the knee, are guarded by thin plates of steel; he also wears close pantaloons and laced boots. Two long Turkish pistols, as well as a poniard, are stuck into his girdle. He has a leathern strap with a noose, like a Mexican lasso, hanging at his side, which he throws with great dexterity over the head of his enemy. A Turkish sabre and a Turkish musket are slung behind his back, and two cartridge holders across his breast.

"The skill with which the Circassians use their weapons is really beyond belief. I have seen them repeatedly fire at a piece of card lying on the ground, at full speed, without missing. They will pick up a piece of money from the ground while executing a charge, by bending themselves round below the horse's belly, and, after seizing the piece, suddenly throw themselves back into the saddle. They form the choicest body of cavalry in the Turkish service, and I have watched them, when charging, attack their opponents with a sabre in each hand, managing the reins with their mouths. They will spring out of their saddles, take aim and fire from behind their horses, then jump into their saddles again, wheel round, and reload their guns as they retreat in full career. They are perfect madmen in the attack, and few troops would withstand the utter recklessness of danger they evince."

Now, although it may be inconsistent with the dignity of the royal household troops to cut such wild capers, can they not, however, derive some very profitable hints from the doings

of these nimble Circassians? If the cuirass can no longer be made bullet proof, make it lighter, and proof only against a cut or thrust, for in a mêlée this will be so much gained. Even Captain Nolan himself, exclusive as he is for light cavalry, when embodying his ideas, offers, as a paragon of an English horseman, what on the continent would be called a pretty heavy dragoon, with helmet, steel gauntlets, carbine, and cumbrous boots, with a covered bar of steel. Having witnessed in India the dexterity of the native cavalry in the use of the sword, and their peculiar "knack of lopping off men's limbs," he is specially concerned about arms and legs, and inquires, "What in battle is the real value of the cuirass or other ponderous defensive armor for the body? So long as arms, legs, and head are unprotected, it signifies little that the chest be covered by armor, for the moment either of the horseman's arms is wounded, it signifies not which arm, he is at the mercy of his adversary." We might reply that, so long as the chest is unprotected, it signifies little that arms and legs be covered with armor, for the moment a man is wounded in any part of the chest, it matters not in what part, he is most likely gone.

The author also wants a better breed of horses. "If England," he argues, "could mount her cavalry on horses combining more power and size than any in Europe, with more breed, speed, and activity than any now in Asia, she ought to endeavor to adopt a system which, in giving full scope to their excellence, would enable the English horse to bear down and ride over the disciplined resistance of continental troops." But since the really distinctive character of light and heavy cavalry lies in the horses more than in the accoutrements, how is it that the author, with such a marked preference for large and powerful horses, is so strenuous in his efforts to prove the superiority of light over heavy cavalry?

Indeed, the examples he quotes to illustrate his favorite

theory are far from being conclusive. At Waterloo, some English light horse successfully opposed the French cuirassiers. This is true, but it is equally true that it occurred only after they had become exhausted by repeated charges, and had performed untold feats among the squares and batteries of Wellington. It is for the same reason that the whole cavalry division under Lord Anglesea, consisting of the finest regiments of the English army, was reduced to less than two hundred men in that same battle, by one regiment of French lancers, under Colonel Bro. The single combat he mentions which took place at Waterloo, between an English hussar and a French cuirassier, proves absolutely nothing, unless it can be shown that both were selected as the best men for the trial; whereas, they encountered each other accidentally in the mêlée, and the hussar, very likely a smart, spunky German (for the English light cavalry is chiefly composed of Germans), got the better of the Frenchman, who, for all we know, was perchance half dead when the other engaged him. But let us admit the English account in every particular, and grant that the result was utterly unfavorable to the character of heavy cavalry; and shall this one isolated case annul the long record of glorious deeds achieved by troops whose bearing and success had become proverbial? Shall all be humiliated because, when exhausted by prodigies of valor, one of their number fell a victim to his heroism in protracting the struggle too long? Certainly the argument is not a happy one, for if valid, to what will this mode of reasoning bring us? What estimate, for instance, are we to lay on English infantry, after seeing the very élite of their veterans, the heroes of the Peninsula, ignominiously beaten and driven to their ships, by some raw levies of American militia, at the battle of New Orleans?

The two cases related by the author, in which French dragoons were worsted by Cossacks, do not establish the superi-

ority of the latter, but rather illustrate the imprudence of receiving the charge of any cavalry, however despicable, without meeting it. The only instance which is calculated to make some impression, is taken from the national war in Hungary, as related by General Klapka.

During this war, says the General, the Hungarian hussars never feared to attack the Austrian cavalry, and often proved themselves more than a match for the steel-clad horsemen and heavy-armed dragoons of the Emperor. On the third of January, 1849, the Austrians, presuming on their success at Móor, sent several squadrons of cuirassiers forward to attack the Hungarian centre, posted in front of Tétény. One squadron of the Tenth hussars advanced resolutely to meet them, and, "led on by their officers, charged and burst into the midst of their mail-clad antagonists. A bloody and desperate mêlée ensued, in which a great part of the cuirassiers were cut down or made prisoners; the remainder sought safety in flight."

This certainly was an extraordinary exploit; but what is it, when compared with the charge of the Thirteenth cuirassiers near Lerida, which, in less than fifteen minutes, and with the loss of very few men, cut down ten thousand of the élite of the Spanish army under General O'Donnell, infantry, cavalry, and artillery, making six thousand prisoners? Nor is this all. At the battle of Saguntum, when the French hussars had been obliged to retire before an overwhelming force, when part of the artillery had fallen into the hands of the enemy, and the army under Suchet was on the very verge of defeat, four hundred of the same cuirassiers, under General Boussard, charged the victorious Spanish cavalry, threw them back upon the infantry, broke through the centre of Blake, and not only retook their own lost artillery, but captured part of the enemy's. What, if compared with the celebrated charge of Kellermann at Marengo, where, with two hundred cuirassiers, in less

time than it takes to write this, he turned the tide of battle, making six thousand grenadiers lay down their arms? What, if compared with the dauntless courage of Caulaincourt, at the head of Montbrun's cuirassiers, overthrowing the regiments of horse which Kutusoff opposed to him, and storming and taking the great redoubt at Borodino? In fairness, all these facts should be stated side by side, if really meant for our instruction. The Hungarian hussars, probably the best light cavalry in Europe, were, at the time mentioned, animated by the courage of despair, whereas the Austrian cuirassiers, overworked as they had been for want of light cavalry, were hardly in condition to encounter any good troops, light or heavy.

This is corroborated by the following extract from a letter, quoted by Captain Nolan, and received by him from an old cavalry officer and aide-de-camp, who served on the side of the Imperialists and against the Hungarians:

"I will try to answer your inquiries about our cavalry and the effect of our cuirasses.

"From what the cuirassiers say, their cuirasses saved them from many a bullet and many a thrust in the mêlée. This may be true, and the advantage of the armor probably is, that those who wear it fancy themselves safer, and are therefore morally stronger and more ready to look danger in the face. Of other advantages of heavy cavalry over light, we find none during the Hungarian campaigns. We were not in a position to employ heavy cavalry as it should be employed to reap advantage from it, and this for many reasons.

"We had but few regiments of light horse at our command; the heavies had to do outpost work, skirmishing, reconnoitring, &c., and the horses were knocked up with the weight they had to carry.

"As to the result of the engagement between them and the Hungarian hussars, I must first tell you what my opinion is in

general with regard to the charges of cavalry, and this opinion I formed upon the experience gained during the war.

"The success of a cavalry attack depends not so much on the description of cavalry or horse employed, as on the description of the men; on their being accustomed to victory; on confidence in their leaders; and last, not least, on the charge being made at the right moment.

"Thus, in the first half of the Hungarian war, the depressing moral consciousness of having abandoned their colors, together with being badly commanded, greatly influenced the behavior of the Hungarian regiments; and after their defeat at Schwechat, the only difficulties we experienced during our advance to Pesth were occasioned by the cold, and not by the enemy.

"At Babolna they tried to make a stand; one of their regiments formed square, but was at once ridden over and destroyed by two squadrons of Walmoden's cuirassiers, who advanced to the charge without the assistance of artillery; and this, as far as I remember, was the only instance on our side in which cavalry broke a square without first bringing artillery into play.

"The squadron of the Tenth hussars, that did such good service at Tétény, was led by Mezey, a subaltern in the squadron at that time: he afterward became their colonel, and his regiment proved itself the best on the Hungarian side.

"Later in the campaign of 1849, except toward the close, the Hungarians received great reënforcements in troops, their moral courage rose, and then came the tug of war.

"New regiments were raised, and in numbers they were superior to ours; but, of course, it was only the old hussar regiments that were formidable. Indeed, they behaved most gallantly, and on all occasions charged home at our cuirassiers and heavy dragoons, but they never liked to close with our Polish lancers."

Indeed, the lance is a most formidable weapon in the hands of those who know how to use it. In 1813, at the battle of Dresden, a division of Austrian infantry resisted for a long time the repeated charges of the French cuirassiers, merely with the bayonet, the rain having spoiled their cartridges. At length, General Latour-Maubourg placed at the head the fifty lancers of his escort, who at once made a breach, through which the cuirassiers then rushed, and completed the work of destruction.

In pursuit of an enemy there is, perhaps, no weapon equal to the lance. In the case before alluded to, in which the French dragoons near Muhlberg made the inexcusable mistake of awaiting, stock still, the charge of the Cossacks, its effects were terrible. Captain Ganzauge, of the Prussian lancer guard, who describes the engagement, states that he himself saw many of the French dragoons cut down or speared from their horses. ("Kriegswissenschäftlichen Analecten," by Captain Ganzauge.) It was in truth a hunt. "But at last," he says, "in emerging from the woods, we came upon a line of cuirassiers, and their steady and imposing attitude brought us suddenly to a halt, without any word being given."

Here, then, it was simply the sight of the French cuirassier which brought a victorious cavalry to a sudden standstill: indeed, the reputation of these troops was established abroad as well as at home. Von Bismark observes that it was with perfect justice that it had become a byword among the soldiers of the Empire to say of one of uncommon bravery, "Il est brave comme nos cuirassiers." Jomini relates that at the Congress of Verona, Wellington personally stated to him that he had never seen anything equal to the ten or twelve repeated charges of the French cuirassiers on troops of all arms at Waterloo. Carrion de Nisas informs us that at the siege of Saragossa, Palafox had decreed death against any Spanish sol-

dier who, during the sallies, should call out, "Here are the French cuirassiers," so great was the terror they inspired. The dragoons had acquired, on their side, such a renown during the Peninsular war, that even Napier acknowledged the superiority of the French cavalry over that of his own country.

By thus commending the exploits of heavy, we do not mean to underrate the services of light cavalry, whose annals abound in feats of courage and audacity equal to the most heroic deeds ever achieved by the former. It is not disparaging light cavalry to assert the superiority of heavy in the charge, nor is it lessening the importance of the latter to insist that light cavalry has special duties to perform for which the heavy is totally unfit. We might as logically infer from the various instances in which squares have been broken by cavalry, that infantry is no longer good for anything, as conclude against this or that kind of cavalry, because on some particular occasions it may have been worsted by some other. A sound judgment does not draw its conclusions from exceptional and isolated cases, but from the ensemble of facts and circumstances. And in a cavalry charge, how many are the conditions of success, and how little can cause its failure! A sudden break in the ground, some unnoticed obstacle, an ill-judged order, the hesitancy or rashness of a leader, the exhaustion of men and horses, confusion created in the ranks by the enemy's artillery, a low moral condition of the troops consequent on a series of losses or defeats, these and countless other like causes have often frustrated the best-planned charges. And where shall we find trustworthy records of all these facts, so essential to the formation of a discriminating and impartial opinion? We read the official reports of the contending chiefs or the accounts of eye-witnesses; but do they agree? How shall we scan the reasons and motives which may have induced such differences of apprehension? How many collateral evidences must we not collect,

that we may investigate the subject in all its manifold relations? We can, therefore, hardly be too cautious about giving heed to the representations and arguments on which reforms are urged; and when the state is concerned, it would be imprudent to disregard the practical solutions the question has received at the hands of those governments which, by the very interest they have at stake, are obliged to give the matter their constant and closest attention, in view of future contingencies.

But, even suppose light cavalry to be the only kind desirable, the practical question arises, can we have it exclusively? Were we to accept none but light-built men and small and nimble horses, there is not a country in the world rich enough in men and horses to provide sufficiently for its cavalry. Obliged, however, as we are, to take all that are fit, we naturally give the light horses to the smaller men, and assign the large and powerful ones to those that are stouter and brawnier. But we shall soon find that large and small horses cannot work well together, and we shall have to separate them, be it in platoons, squadrons, regiments, or brigades. Thus, whether we like it or not, sooner or later we shall have both light and heavy cavalry, each with its own peculiar aptitudes, and each contributing its share to the general good in the day of battle.

It is the very force of circumstances that has produced both kinds of cavalry. It is strange, therefore, that Captain Nolan, who was well aware of this, should advocate only one kind, totally unlike anything now in England, whether heavy or light. With him it is not, as with Morand or De Noé, the Cossacks or the Arab horsemen, but the Sikhs of Hindostan and their tactics, which he chooses as models. After relating some extraordinary feats of these men, whom he describes as mean looking and ill dressed, and their horses as small, meagre, and ill shaped, with the aquiline nose, which so peculiarly proclaims

inferiority of breed, he says: "How comes it, if our system is good, that such men, of less physical and moral courage, mounted on inferior animals, should have been able to cope with our English dragoons, and not seldom successfully? for at the battle of Chillianwalla, they tell of a Sikh horseman challenging the English to single combat, and unhorsing three dragoons before he was cut down." "And what," he asks, "does a charge resolve itself into, but a mêlée or a series of single combats?"

This is the duel over again, as at Waterloo, between a hussar and a cuirassier, with similar inferences. *One* Sikh once beat three English dragoons, one after another; therefore *the Sikhs* are the better kind of cavalry. But Napoleon, in referring to the engagements between his cavalry and the Mamelukes, who, we believe, were quite equal to the Sikhs, comes to a very different conclusion. It was his experience that "two Mamelukes kept three Frenchmen at bay, because they were better armed, better mounted, and better exercised. But a hundred French horsemen did not fear a hundred Mamelukes; three hundred were more than a match for an equal number, and one thousand made easy work of fifteen hundred: such is the influence of tactics, order, and discipline. Murat, Leclerc, and Lasalle always formed in several lines, and when the Mamelukes prepared to outflank the first, the second line came up right and left to its assistance. The Mamelukes then stopped and wheeled to turn the wings of this new line. This was the moment the French seized upon to charge, and always with success." Observe, that of the seven regiments of cavalry which Bonaparte had to oppose to the numerous troops of the Beys, only two were light, the Seventh hussars and the Twenty-second chasseurs; the remaining five were heavy, the Third, Fourteenth, Fifteenth, Eighteenth, and Twentieth dragoons.

Captain Nolan dislikes the English cavalry as it now is, and craves something totally different. As for the men, he accepts

only handsome, smart young fellows, from eighteen to twenty-four years of age, weighing about ten stone—a hundred and forty pounds. The moment they become stout, whether from good living or age, he would transfer them to the infantry or foot guards, to make room for lighter recruits. In respect of horses, there is nothing now in England or in the colonies wherewith to carry out his ideas, and therefore he wishes government to bestir itself and raise a special breed for the purpose.

"Our cavalry horses," he says, "are feeble; they measure high, but they do so from length of limb, which is weakness, not power. The blood they require is not that of weedy race-horses (an animal more akin to the greyhound, and bred for speed alone), but it is the blood of the Arab and Persian, to give them that compact form and wiry limb in which they are wanting.

"The fine Irish troop horse, formerly so sought for, are not now to be procured in the market. Instead of the long, low, deep-chested, short-backed, strong-limbed horse of former days, you find nothing now but long-legged, straight-shouldered animals, prone to disease from the time they are foaled, and whose legs grease after a common field day. These animals form the staple of our remount horses.

"Decked out in showy trappings, their riders decorated with feathers and plumes, they look well to superficial observers; but the English cavalry are not what they should be. If brought fresh into the field of battle, the speed of the horses and the pluck of the men would doubtless achieve great things for the moment, but they could not endure, they could not follow up, they could not come again.

"All other reforms in our cavalry will be useless, unless this important point be looked to. It is building a house on the sand, to organize cavalry without good horses. Government alone could work the necessary reform, by importing stallions

and mares of Eastern blood, for the purpose of breeding troop horses and chargers for the cavalry of England."

The wishes of General Morand were Utopian; the plan of Colonel de Noé is not very practicable; but the scheme of Captain Nolan, we fear, none of us shall live to see realized; and since all other changes will be fruitless unless the new breed of horses be first obtained, we may safely infer that, for a long time to come, light cavalry and heavy will continue side by side in the military establishment of England as well as of every other nation obliged to keep up a large regular army.

But the question is not solely between light and heavy cavalry. Another description, partaking of the character of both foot and horseman, and which, after repeated trials, has been abolished everywhere, still has its advocates. At all times, instances have occurred where infantry was mounted on horses or mules, in order to arrive more expeditiously at some point of strategical importance, and the success which has recently attended several movements of this kind by the French soldiers in Algeria, seems to have revived the idea of organizing permanent corps, designed to fight both on foot and on horseback. However, after the constant failure of such organizations, wherever they have been attempted, it is not likely that governments will engage in any further experiments of the sort.

These details, however incomplete, will enable us to discuss the subject of cavalry with somewhat more method than is usually the case; and, if our views are correct, it will be admitted that at least some cavalry is necessary. Respecting its numerical proportion, Montesquieu observes that the tendency of cavalry is to reduce its numbers with the progress made in the art of war; and that in all ages, and with all nations, the less advanced they are in tactics, the more numerous will be their mounted troops. The remark is perhaps too absolute, but taking as a basis the present proportion of cavalry in the

European armies, it will remain for our military authorities to consider whether it is proper for our army also, or whether this proportion should be diminished or increased. And as to the question of light and heavy cavalry, since their distinction lies essentially in the size and power of the horses, it will be well first to inquire into the resources of the country before attempting to determine what shall be their relative proportion, and how the different corps shall be armed and equipped.

But howsoever these questions may be resolved, whatever be the appointed number and kind of mounted soldiery, let the utmost attention be paid to their training and discipline, for cavalry badly organized and feebly led, is in battle a most dangerous ally, which, instead of overthrowing the enemy, may bring ruin on itself and on the army to which it belongs. But when ably commanded and thoroughly trained, we can scarcely assign limits to its capabilities, for its achievements have often partaken of the marvellous. It possesses in an eminent degree those two great springs of war that ensure the success of the boldest enterprises, celerity in evolution, impetuosity and force in execution; and by means of these qualities, in which the other arms are wanting, it imparts life and vigor to every department of the army.

How much the success of military operations depends on promptitude and celerity of action is well known. There occur, in war, certain delicate conjunctures which we must instantaneously seize, otherwise the moment of victory vanishes like a meteor. Now, it is necessary to make an impetuous onset without allowing the enemy time to form; then, by a precipitate march, to anticipate the possession of some important and decisive post; again, by a prompt and rapid manœuvre, to take advantage of an enemy's situation, when he himself partakes of the disorder into which he has thrown others. All this cannot be done by infantry, however light and deter-

mined; nor would it be safe for them to engage alone in the pursuit of an enemy, if the latter has cavalry to oppose them. At the battle of Medellin, in 1809, Marshal Victor was operating his retreat, covered by his squadrons. The Spanish General Cuesta, hoping to drive the French into the Guadiana, followed them in hot pursuit, when all on a sudden Latour-Maubourg, wheeling his cavalry, fell like lightning on the Spanish infantry, who were only a few rods behind, charging them with three regiments of dragoons, whilst Lasalle and Bordesoulle threw themselves on their flanks, with the Fifth and Tenth chasseurs à cheval. In less than five minutes the whole Spanish force became a disorganized mass, fleeing in all directions. The gallantry of the French cavalry inflicted upon them a loss of all their artillery and eleven thousand men. It is true that the Spaniards also had cavalry, but being badly organized, and without a leader, it effected nothing for its unfortunate comrades, whom it left to be cut down and ridden over by the enemy's squadrons. Nor was it otherwise at Ocaña, where 45,000 infantry and 7,000 cavalry met 24,000 infantry and 500 excellent horsemen of the French. At the very outset the Spanish cavalry gave way, and the infantry alone had to bear the brunt of the battle. Sebastiani, taking instant advantage of this, cut off six thousand of their infantry, and when the rest had suffered sufficiently from the fire of the divisions of Gerard and Dessoles, he charged them at the head of his dragoons, threw them into confusion, and following up his success, arrived first at Hos-Barrios, where he compelled ten thousand men to lay down their arms.

A good intact infantry, well supported by artillery, and in a favorable position, has not much to fear from cavalry, nor is it likely to be greatly molested by them during the first stages of the engagement. But when exhausted and disturbed by actual conflict, or when, shaken by a long exposure to a con-

centrated artillery fire, its ranks are broken and order is lost, it must fall a prey to the mounted men that are launched against it, unless it can oppose some of its own cavalry, who, by prompt and vigorous charges, may repel the attack, cover the retreat, nay, even, as at Medellin, retrieve the day. It is at such moments that a want of cavalry is most severely felt. Battles have been won with little or no cavalry, but they have always proved sterile and without results. The enemy is repulsed, but not destroyed; and after a few days reappears in the field with undiminished numbers, and ready to renew the contest. All this might have been prevented, had a few squadrons been let loose in proper time on the retreating forces. They would have done what infantry alone can never accomplish. There is no running away from horses; even on difficult ground, good horsemen can make their way. No doubt some saddles will be emptied, some horses killed, but the enemy will have lost his guns, his baggage, and stores, and, if not annihilated, will yet be so disorganized that for a long time he must remain powerless to resume active operations in the field.

Precisely these were the great results obtained at Jena by the reserve cavalry under Murat. Toward the end of the battle, the Prussian reserves under General Rüchel had come forward, and with them he hoped to arrest the efforts of the Emperor long enough to allow the regiments of Hohenlohe to make good their retreat. Already two divisions of the Fourth corps had been obliged to form square to receive the charge of the Prussian cavalry, when the cuirassiers and dragoons of the French reserve, with Murat at their head, arrived on the field. At the sight of the enemy, they rushed upon him, and the entire corps of General Rüchel, infantry and cavalry, were broken through and thrown into fearful confusion. All that did not surrender were cut down. Some squadrons, following

up their advantage, took in the flank the regiments of the centre that were in full retreat toward Weimar. In vain their infantry formed squares; five or six of these were broken and cut to pieces, and their cannon taken. In less than an hour the defeat of the right and centre of the Prussian army was effected, and followed by the most fearful rout recorded in the annals of warfare. Blücher was driven toward Lübeck, and Hohenlohe toward Prenzlau, where he capitulated, pursued by cavalry only, and though there was not a single French battalion in the neighborhood. Twenty thousand killed and wounded lay on the field of battle; nearly as many were taken prisoners; besides, two hundred pieces of cannon and twenty-five standards fell into the hands of Napoleon, whose way to Berlin was now open. So utter was the defeat that the French found no further enemies this side of the Vistula.

No victory is brilliant which is not followed up by cavalry, and no battle really destructive which is not determined by them. Even cavalry alone has performed feats which, if not well authenticated, would simply seem impossible. In 1809, the Duke del Parque, after having defeated the French corps of Marchand near Tamanes, appeared with a strong force in the plains of Medina del Campo. Here he met Kellermann, who, with an army of only twenty thousand men, courageously offered battle to the Spanish army, which was more than double the strength of his own. The Spanish General, however, not wishing to hazard an engagement, retreated so precipitately before the army of Kellermann, that the latter, fearful of his escape, resolved to leave his infantry and artillery behind, and pursue him with his cavalry alone. This consisted of six small regiments of dragoons and two of chasseurs à cheval, in all about two thousand eight hundred horses. Placing himself at their head, he rushed in pursuit of the enemy, whom he overtook near Alba de Tormes. To see them

and fall upon them was the work of a moment. In vain the Spanish cavalry tried to arrest the intrepid French dragoons; they were thrown back upon their infantry and artillery, whom they carried with them in their flight. Twenty cannon, four thousand prisoners, and as many slain, were the first fruits of this victory, to which the next day added four thousand prisoners more. The French lost one captain and thirty dragoons.

It would require volumes to relate all the high deeds of cavalry recorded in the history of warfare. It will not do, therefore, to indulge in invidious comparisons, nor to engage in unfriendly speculations, as long as its inferiority to other branches of the service is not clearly and definitely proven by authentic facts. The question is by no means whether infantry is the principal arm, but whether it can flourish without a strong and well-organized cavalry. There is a third arm, the artillery, which can secure no real success in war unless assisted by the other two; yet no one will contest the importance of its services, nor the indispensable necessity of keeping it well trained, well instructed, and steadily advancing with every step of progress made by it in other armies. That infantry is the mainstay of battles is indisputable. It is around it that the rest of the army gravitates; it is suitable to all grounds; it can act both on plains and in intersected countries. It is endowed with the two qualities most essential in combat, attack, by means of the bayonet; defence, by means of its fire. But these faculties belong to it in only a limited measure, and therefore must be completed by the action of cavalry and artillery, which, though severally possessing only one of these powers, nevertheless possess that one to a degree unattainable by the most perfect infantry. In an open country, without a sufficient number of excellent squadrons, every defeat of infantry is fatal, every victory incomplete. An army composed exclusively of infantry, even if in all other respects fully equal,

must nevertheless be certainly vanquished by one much inferior in numbers, but consisting both of infantry and artillery, and the defeat would be rendered only the more terrible were cavalry combined with the artillery and infantry. Nay, we may go further still, and hold that on an open plain, and depending wholly on its own resources, any infantry must at last succumb to cavalry assisted by a good body of artillery. Its destruction would be a question of time alone, even were a Napoleon or a Cæsar to command it.

In short, artillery, cavalry, infantry are all indispensable to each other. Without doubt, the improved firearms have made the latter more formidable, but hence to infer that they have also rendered cavalry useless, would betray an ignorance found only in those who have read of battles, but have never witnessed them. No! the days of cavalry have not gone by. This arm is now as essential as ever. Its duties may have become more difficult, it may require more bravery, and greater skill and determination; but for this very reason we should not chill its ardor by ill-founded and disparaging remarks, especially at a crisis when we must have recourse to its services, and when our success, nay, our very fate, may depend on its dauntless heroism and noble self-sacrifice.

## CHAPTER II.

### STRATEGY.—TACTICS.

In reading the description of military operations among the ancients, it cannot escape our notice that some bear no inconsiderable resemblance to those of modern armies, whilst others are entirely different. The former usually relate to the object of the enterprise, the plan of campaign, and the general conduct of the war, which constitute Strategy; the latter to marches, orders of battle, encampments, &c., which belong to Tactics. Thus, when tracing the famous expeditions of Hannibal and Napoleon across the Alps, we may note more than one point of resemblance, but the battles which followed afford no grounds whatever for comparison. The reason is, that the general dispositions were determined by topographical considerations, which remained unchanged; whereas the special dispositions, the evolutions, in a word the tactics depending on the kind of arms used at the different epochs, were variously modified thereby. Valuable, therefore, as the study of history is for strategical purposes, we would be liable to fall into serious errors if we endeavored to apply to our own times the knowledge which it gives us of the tactics of the ancients. In like manner, if the greatest captains of antiquity, Alexander, Cæsar, Hannibal, could return to earth, they would undoubtedly perceive the general bearings of our wars, nay, even be able to

give most excellent advice; but in witnessing one of our battles, they certainly would be puzzled at first, and it would probably require more than one campaign for them thoroughly to comprehend the result and influence of our institutions, and especially of our firearms, on the mechanism of modern armies.

Tactics have been defined as the Art of war; strategy, the Science. Art changes with the elements from which it springs; science is absolute and immutable. Tactics vary with every system which a new war may bring forth; strategy acts always by unalterable laws. The object of war is ever the same, but the means of waging it are variable.

The tactics of the ancients consisted in pressure and percussion; yet Philip's famous phalanx was obliged at last to yield to the legionary tactics of the Romans. So gunpowder has displaced deep formations; artillery has transformed walls into ramparts; heavy rifled cannon compel iron-clad vessels, and the improvement of small arms has greatly modified the former order of battle. Thus will it ever be; for every new method of attack, a corresponding mode of defence will be contrived, and tactics will be changed accordingly, since they are merely the art of placing troops in position for battle, and of manœuvring them to advantage.

Simple position and movements of troops are called evolutions; the combination of evolutions is called manœuvre; and the art of applying these manœuvres to the operations of war in such manner as to secure the object in view, is called tactics. Strategy is the science of designing and determining the plan and course of operations of a war. Science, being the product of the understanding, can be acquired only by study; but inborn talent is requisite for the art. Doubtless this may be cultivated, but it can no more be acquired by those who are deficient in natural abilities, than a man can become a great musician without natural talent for music. This is self-evi-

dent; and experience shows that on many occasions, extremely well-informed officers, who have designed unexceptionable plans of operations, lack the talent to conduct and dispose their troops in the field of battle. Nay, many officers of high rank are incapable of manœuvring a squadron on parade; while, on the contrary, men who are unable to form plans of operations, often lead their troops to victory with wonderful ability. The line of demarcation between strategy and tactics may perhaps be still more clearly shown by stating that strategy designs, tactics execute the operations of war; or, in the words of Archduke Charles, that strategy prepares battles, and leaves to tactics the trouble of gaining them.

From what precedes, we may regard strategy as more specially the science of the commander-in-chief; and tactics, in all their various ramifications, from the school of the platoon to the evolutions of the line, from the bivouac of an outpost to the encampment of an entire army, as belonging to officers of all grades. Still, it would be difficult to mark, in all cases, the exact limits between the two, since, from their very nature, they may often be in part at least identical. The Greeks understood, by tactics, the art of drawing up soldiers in array, and moving them according to approved principles; and a taktikos was one who understood tactics. By degrees, however, the word lost its primitive meaning, and when at length it expressed only the simplest mechanical drill, the taktikos became what we would now call a drillmaster. Meanwhile, fashion applied the title strategos, originally importing the leader of a phalanx of four chiliarchies, to what was formerly the taktikos, and ever since the words tactics and strategy have been often indiscriminately used.

So many opinions have been advanced on the subject of tactics, strategy, and the art of commanding armies in general, that the young soldier who has not acquired the needful prepar-

atory knowledge, can scarcely escape from confusion and error. As, however, no branch of the service can intelligently coöperate for the general good, without a clear understanding of its relations to the whole, we will first offer some elementary remarks on the principles of strategy and tactics, before entering on the details of cavalry in particular, the study of which will in this way be rendered much more comprehensive and satisfactory.

A military operation is considered correct only when it is designed and executed according to the principles of strategy and tactics; that is to say, first, when the most powerful objects and lines have been selected according to the principles of strategy, insuring perfect safety of operations; and secondly, when the movement and arrangement of troops, whether on a march, in position, or in cantonments, are conducted according to those rules of tactics which provide for an advantageous engagement at any moment. Every military operation and every manœuvre must, therefore, be designed according to the principles of strategy, and executed according to the art taught by tactics. When a general neglects the application of strategical principles, battles are fought with no higher object than to win the laurels of a new victory; and history tells us of whole campaigns, famous for several sanguinary conflicts, but utterly void of valuable results, because they were not conducted upon sound strategical considerations.

As well in regard to strategy as tactics, every military operation may be divided into three parts, viz.:

Stragetical.
1.—The subject or base of operations.
2.—The object of operations.
3.—The lines of operation.

Tactical.
1.—Position.
2.—Movement.
3.—Engagement

By base of operations is meant those strategical points which are connected with each other by roads of communication. These points must be fortified, in order to collect upon them the means indispensable to the prosecution of the war, and to secure them against any operation of the enemy. An army acts defensively when it confines itself to the maintenance of the strategical points which it already occupies, and offensively, when it advances from these in order to gain other strategical points. The points which are to be attained in offensive warfare, are named objects of operation; and the roads by which they are attained, lines of operation. These are also called lines of retreat, when they are used for escape from a victorious enemy, and to fall back on the base of operations, which, when intended only to keep the enemy in check, takes the name of line of defence.

A base of operations should consist of a number of strong and solid points, on which all that is necessary for the wants of the army is brought together. If these points are connected by some natural object, as a river, a chain of mountains, large marshes, or dense forests, the line is rendered so much safer, by the obstacles which it interposes to the approach of the enemy. A broad base of operations is preferable to a narrow one, for it allows greater freedom of action in forward movements, and diminishes the chances of separation from it. If it consisted of a single point, by seizing the roads which lead to it, the enemy might cause almost inextricable embarrassment, by cutting off supplies and reënforcements. Indeed, to cover both base and line of operations to the uttermost, is a rule which it is dangerous to violate even with superior forces. The form of the base is also a matter of no slight importance. When it presents a concave line toward the enemy, with its extremities resting on the sea, or some large lake, or other projecting obstacle, the army finds a much safer support for

its wings, than if it were convex, or had some part of its centre forming an outward angle.

The extent of the line occupied by an army in advance of its base is called its front of operations, and seldom exceeds forty or fifty miles, that the troops holding it may be concentrated in five or six hours. When an army moves forward to a great distance, it is obliged to take a new base in advance of the first, with nearer depots, from which the wants of the troops are then supplied. This new line is called a secondary base of operations; it is generally formed on some transversal river, and its principal towns are fortified, in order to protect the military stores they contain against the enterprises of the enemy.

All roads are not equally good for marching toward the enemy. Some lead more directly and more safely to the objective point than others; some are preferred as we happen to be stronger in infantry or cavalry, or because they offer more abundant resources, or afford better chances of turning the enemy's positions: others, again, receive a better protection from the base of operations, &c., &c. To weigh all these advantages well, and from them all to make a judicious selection for a line of operations, constitutes one of the cardinal talents of a commander-in-chief.

A line of operations is simple when the whole army marches in the same direction, and in one body, or at least when the troops composing it are not so far distant from each other as to be incapable of prompt mutual assistance. They then follow the roads that are parallel and near each other without serious intervening obstacles. When an army is separated into two or more parts, which, starting from the same base, follow different directions, too divergent for all the forces to meet on the same day, in the same field of battle, the lines of operations are called double or multiple. This is an exceedingly hazardous

mode of advance, unless the enemy is very inferior in numbers, for by interposing his forces he may beat the fractions of the army each separately, and cut off their communication. Hence it appears that, whilst it is dangerous to allow oneself to be surrounded in the battle field, it is not so when the distances are great, and when the surrounding troops are too far off to combine their attack. On the contrary, it is then a signal advantage to be in the centre, provided we are capable of sufficient activity to control the situation. Thus the dictates of strategy sometimes essentially differ from those of tactics; they may even be diametrically opposed; and this is one of the reasons why their application is often so delicate a matter.

We should not mistake for double or multiple lines of operation, the diverse directions followed by the different corps or divisions of an army in order to meet on the same central point. Here all converge toward one object, and they are separated only for the moment to facilitate their march, to scour the country, and to provide more easily for their subsistence. So far from being objectionable, such a separation is consummate art when it is so conducted as to cease at the moment of battle, for it effectually renders the enemy uncertain of the real point of attack. To spread out an army over the widest extent of country, when circumstances allow or compel it, and rapidly to effect their concentration, in order to strike a sudden and decisive blow, is one of the highest feats of military genius. The scene for such operations was what Napoleon used to call his chess board.

If we have a choice of many lines of operations, we should prefer that one which offers greatest facilities for subsistence, and on which the army, according to its composition, will be least exposed. So, if we are strong in cavalry, we should select an open country; if not, we will prefer one that is mountainous, wooded, or intersected. A line of operations which runs

along a river is exceedingly advantageous, because it furnishes an excellent support for one of the wings of the army, whilst at the same time it facilitates the means of transportation. The position of the enemy also exerts much influence on the choice of a line of operations. Should he occupy a wide extent of country, with isolated corps, that route is to be preferred which leads into the midst of them, and thus affords a chance of separating them; for if, under such circumstances, the line of operations were directed against one of his flanks, his different corps would be thrown back one upon another, and thus their concentration would be hastened instead of being prevented. If, on the other hand, the enemy is concentrated, select a route that threatens his flanks, provided you do not yourself incur the risk of being cut off; for on planning any movement, the first law is never to expose one's base or line of operations.

A line of operations whose length is disproportioned to its base, loses its strength by giving too much scope to the enterprises of the enemy. This is one of the reasons for the establishment of successive secondary bases of operation. It is impossible, however, to determine beforehand the exact proportion between base and line of operations. The triangle formed by the actual position of the army and the two extremities of the base, may vary in a thousand different ways. Moreover, its form and magnitude seldom depend on our will. As a general rule, however, the broader the base, the farther the army may venture from it without danger of compromising its communications; just as a pyramid may be raised higher without impairing its strength, when its base rests broadly on an ample area of ground.

The points or objects of operation are also called strategical points. This denomination comprises not only those which are accounted the prime objects to be attained, but likewise all

those whose possession would yield positive advantages. A capital is always a strategical point of high importance, because it influences the opinion of the country at large, and offers abundant resources. Moreover, in seizing it, we paralyze the administration and defensive means of the enemy, and to the mass of the inhabitants all hope seems lost, when an invading army has come within the very heart of the state. Therefore, were the advantage of its occupation merely the moral effect it produces, it should always be a main object of an enemy's operations when acting on the offensive. All points whose occupation is serviceable, either to threaten the enemy's communications or to cover our own, are strategical points. Those must be selected which facilitate the combination of the movements of the different corps of an army. Thus the junction of roads, valleys, rivers, streams, commanding heights, in short, all places which are keys to important communications, or contain the defence of important passages and positions, are strategical points.

Before undertaking a war or any military operation whatsoever, some definite object should be kept steadfastly in view, that we may determine upon the specific means of its accomplishment, and leave nothing to chance. This is what is called making a plan of campaign; and the very term imports a war carried on offensively. Such a plan must of necessity be limited to the main strategical dispositions, and can contain only the outline of operations, leaving ample scope for the details of execution. It would be truly absurd to prescribe to the general what he should do day after day; for, from the moment when he enters within the sphere of the enemy's activity, he no longer does what he would, but what he can. Marches, manœuvres, combats, all depend on imperious circumstances; the determinations are sudden, and result from the attitude, resources, moral condition, and forces of the enemy. The

general, therefore, must have a large liberty for the execution of the plan of the campaign, whose main features a council may have traced, but whose details are best intrusted to him, who is charged with the responsibility of carrying it into effect, and who is personally most interested in its success.

It is by the aid of the best maps of a country, that the first outline of a plan of campaign is traced; and for this purpose maps on a small scale are to be preferred, because they allow the eye to grasp the whole country at a single glance. All that is required is, that they give, exactly, the situation of the main towns, rivers, roads, crests of mountains, and boundaries. The clearest are the best, being the easiest for consultation. Afterward maps on a large scale must be consulted for all matters of detail; whilst for the purpose of establishing camps, taking up positions, determining the order of battle, and the like, topographical maps are necessary.

It is by preparatory movements, by marches well combined and skilfully executed, with a view to secure a position on the vulnerable points of the enemy's lines, that the way is cleared for those immense results which are sometimes obtained by a single victory. A victory is always gratifying, but its value differs according to its consequences. If it enable the army to cut off the enemy's communications, to separate him from his base, to disperse or annihilate him, it is decisive; but it is of little moment if powerless even to interfere with his retreat. In this event the battle must be repeated; in the former case the blow is final.

All strategical calculations are founded on means, time, and distances. But the applications of this rule are much easier in a defensive than in an offensive war. In the latter the combinations are vaster, the conditions more variable, and the elements of calculation much more uncertain. At any

moment we may be compelled to change parts, to abandon an attack and assume the defence, in order to escape from sudden perils: it therefore requires a more inventive genius to be ever ready to devise new combinations, than to execute predetermined ones. In a defensive war, the scene is enclosed within a narrower compass, and the combinations being fewer, render it easier to provide for contingencies. One moves on known ground, where peculiarities and resources have been thoroughly studied beforehand; whilst in an offensive war, genius must supply the lack of experience, and, as it were, divine the scene of operations. A superior genius is therefore necessary to carry on an offensive war, where a thorough military knowledge, a keen perception of the proper points of support, a sagacious foresight, and an indefatigable energy, may suffice for a defensive one.

Still, even this is far from being an easy task; for, properly speaking, a war is never purely defensive, except when our means are very inferior to those of the enemy. Arms, instruction, and experience being equal, numbers assuredly are to be taken into consideration; but the difference between this and that army, on such and such occasions, depends far more on the moral condition of the soldier, his discipline, tenacity, and endurance; in short, on all those intangible qualities which cannot be measured by technical rule, but are discernible only by an intuition of that sublime part of the art, which presupposes in him who possesses it, a thorough acquaintance with the human heart, and the instinct to guess what passes both in his own ranks and in those of the enemy. These inspirations, so uncertain, so variable, constitute what may be called the moral part of the war—mysterious powers, which, kindling the fires of enthusiasm in every breast, may incalculably intensify the strength of an army, and convert into victory what otherwise would have been assured defeat.

There is no art that requires greater natural gifts than the art of war: mind and body must here coöperate, and both must be sound and vigorous. The talent to seize, as it were, with a glance, the advantages and disadvantages which may arise from the situation of ground or troops, and to single them out from all other objects—this characterizes the man born to become a general. This coup d'œil, namely, the comprehensive one, which in unexpected results, and in the most violent changes of fortune and calculations, enables the general to discern quickly and to judge correctly of his situation, and then, with firm determination, to extort, as it were, from fortune, that which she will not freely give; or prudent and judicious, to extricate himself from a dangerous position—this is not to be acquired, this can be reduced to no general formula, nor be delineated upon plans and blackboards, but is, in the strictest sense of the word, military genius.

The qualifications which a consummate general should possess, may therefore be divided into two branches, one of which can be acquired, but the other must be innate: that is to say, into the scientific part, or that which can be mathematically constructed; and into the philosophical part, or that which depends upon the sound judgment of a well-regulated understanding. The difference is as great as that which exists between the knowledge of a thing, and the ability to carry it into execution; but the possession of one only of these qualities falls short of the ideal, and both, united in one man, are indispensable to form the perfect general.

"The general called to command on the field of battle," writes Thiers, "has first, as in all liberal professions, to acquire a scientific education. He must be master of the exact sciences, the graphic arts, the theory of fortifications. An engineer, an artillerist, a good field officer, he must be, moreover, a geographer, and not a common one, who knows from beneath what

rock each river springs, or where it empties, but a profound geographer, who is thoroughly conversant with the map, its plan, its lines, their bearing, and their import. He must, moreover, accurately understand the force, the interest, and the character of the nations: he must be instructed in their political, and especially their military history; he must, above all, know men, for men in war are not machines; on the contrary, they there become more sensitive, more irritable, than elsewhere, and the art of leading them with a firm and gentle hand was always an important part of the tact of great commanders. To all this higher knowledge, the leader must further add the more common, but not less necessary acquaintance with administration. He needs the spirit of order and detail of a clerk, for it is not enough to make men fight; they must be fed, clad, armed, and attended to when sick. He must display at once, and in the midst of the most extraordinary circumstances, all this extensive knowledge. At each moment he must think of the day before, and the day after; of his flanks and his rear; move everything with him, ammunition, provisions, hospitals; calculate at the same time on the state of the atmosphere, and the moral condition of the men; and combine all these different and variable elements, which are unceasingly changing and complicating themselves, in the midst of cold, heat, hunger, and bullets. While he is thinking of all this, the cannon roars and his head is endangered; but what is worse, thousands of men are gazing upon him, reading in his countenance the hope of their safety. In the distance beyond them appears his country, with her laurels or her cypresses; but all these images he must banish from his mind; he must think, and think quickly, for one moment more, and the finest combination has lost its power, and instead of glory it is shame that awaits him."

Observers, who are distant from the scene of action, are

often apt to blame the general, who does not meet their eager interest in events by rapid movements and a quick succession of engagements, ignorant of the endless difficulties that are opposed to him; great falls of rain, impassable roads, which often in one week change the condition of the troops in such a manner as to render them scarcely recognizable. When the soldier, exposed to all weathers, is marching through morasses by day, and lying on wet ground in cold nights, in tattered clothes, barefoot, wretched, and miserable; when the horses are without shoes or forage, and the troops are struggling against hunger in consequence of the baggage wagons being unable to proceed; in fine, when an army encounters all these disadvantages, and therefore becomes paralyzed in its operations, the distant critic remains ignorant of the facts, because the commander of the army refrains, out of prudence, from stating in his official reports the real condition of the troops. It is usual and easy to judge by the results, and not by the preceding circumstances.

With the people, a general who beats is always right; one who is beaten, always wrong, whatever the odds he had to contend with. Still, while it is but natural to applaud the former, we should not be too rash in our censure of the latter. Even if competent to form an opinion, we should be indulgent, and reflect that, at the moment when he was constrained to act, he may have been but imperfectly acquainted with the number and position of the hostile forces; that having no certain information, he was reduced to mere conjectures more or less vague, to simple probabilities; that many things have since come to light, which for him as well as for us, were then in the dark; that had he known them then he would undoubtedly have seen, as we now do, what was truly best, and that, perchance, he failed not from lukewarmness or incapacity, but because the irresistible force of pressing circumstances compelled him to act at the moment, irrespectively of all his pre-

concerted plans. Let us, then, be modest in our judgments; let us be indulgent, or rather just, toward those whom we ought to reverence as our masters in the art; let us make due allowance for such errors as may have escaped their notice. It is in this way alone, that we may be permitted sometimes to discover happy chances, and favors of fortune, in what are generally esteemed their most glorious achievements.

These few remarks will suffice for our present purpose. Those who are desirous of making a more thorough study of strategy, as well as of tactics, of which we will now present a general outline, may read to advantage: Dufour, "Cours de tactique;" De la Barre Duparcq, "Eléments d'art et d'histoire militaires;" Vial, "Cours d'art et d'histoire militaires;" Jomini, "Précis de l'art de la guerre;" Decker, "Die Tactik der drei Waffen, Infanterie, Kavallerie, und Artillerie," &c. Further instruction must be sought for in the study of the most memorable campaigns, where precepts are supported by facts; always endeavoring to discriminate between results which spring from combinations, and those which are owing to chance. For purely strategic purposes, Cæsar's Commentaries are highly suggestive; in general, however, preference should be given to the annals of our own epoch, for the examples in these are likely to be better understood, on account of our being more familiar with the circumstances. In this respect the works dictated by Napoleon and published by Montholon, under the title of "Mémoires pour servir à l'histoire de France;" and Thiers' "Histoire du consulat et de l'empire," merit especial attention. We should remember, however, that the history of the past is by no means the mould of the future, and therefore, whatever benefit we expect from the facts recorded in these works, whether modern or ancient, should flow rather from their suggestions and inspirations, than from any models they may be supposed to furnish.

To organize an army, is to establish divisions and subdivisions, according to acknowledged principles, and to appoint officers able to instruct and lead them, so that the whole may be put in motion by the will of one single man. One man alone cannot directly command one hundred thousand. He needs intermediary chiefs, who under him command numbers more or less considerable, and who, in their turn, are in personal contact with a very limited number of subordinates. Thus the general-in-chief of an army of one hundred thousand comes into immediate relation with only three or four generals, severally commanding a corps d'armée; each of these, with two or three generals commanding divisions; each of these again, with two or three generals commanding brigades, and every general of brigade, with two or three colonels, until at last we reach the corporal, who personally commands eight or twelve men. Thus a regular gradation exists, which connects the general-in-chief with the last man in the army.

The subdivisions of regiments are, for infantry, the battalion; for cavalry, the squadron. They may be considered the tactical units of an army, and these names are often used to express the strength of a corps, by indicating the number of battalions and squadrons which compose it. A regiment of artillery is generally divided into companies, some of which are equipped as harnessed batteries, while the others are used in siege, garrison, and seacoast defence.

The administrative unit is the regiment, divided into companies, squadrons, or battalions. Every regiment forms a quasi family, where the colonel is the father and chief magistrate, which titles attribute to him, not only a dauntless courage and intrepidity, which render him the first soldier in battle, but also the spirit of order and justice, with unwavering firmness and decision. It is he who is the source of every impulse; on him depend the tone and character of the regiment.

Some modern tacticians acknowledge only one kind of infantry, cavalry and artillery. Without discussing the matter here, we merely state that the distinction between good marksmen—men light, nimble, well built and intelligent, and others not so gifted—has led to a classification into infantry of the line, light infantry and riflemen; each armed according to the nature of the service required, the last with superior rifles. In like manner, the different size and power of the horses, and the different uses for which these fit them, have caused a classification into heavy or reserve cavalry, generally cuirassiers; cavalry of the line, lancers and dragoons; and light cavalry, hussars, chasseurs à cheval, &c. Field artillery, manned by soldiers marching at the side of the pieces, or when necessary, mounting the ammunition chests, is called mounted artillery; manned by soldiers on horseback, in order to follow the evolutions and manœuvres of cavalry, it is called horse artillery.

The division is the first tactical unit in which the three arms are intimately connected and possess all the means of independent action. Permanently attached to it, is a certain number of squadrons, hence called divisional cavalry, a number of field pieces organized into batteries, and all that is additionally necessary to make it a small army in itself. The reserve cavalry and cavalry of the line, generally form separate divisions, and so also is the reserve artillery united into one command, in order to be at the immediate disposal of the general-in-chief.

The three arms, infantry, cavalry, and artillery, enter into the composition of an army, according to the nature of the country in which they operate. In a mountainous country less cavalry is needed than in a plain and open one; the same is true of artillery, especially of heavy caliber, on account of the difficulty of transportation. The customary proportion, however, in the great European armies, is two hundred cavalry and three field pieces for every thousand men of infantry.

In addition to the above, which form the number of combatants, every army includes a vast number of others, whose services are equally indispensable. They are connected with the quartermaster's department, subsistence department, medical department, ordnance department, pay department, &c., &c., and carry with them an immense train of army wagons, for the conveyance of ammunition and implements of war, provisions, money, supplies for hospitals and ambulances, tool chests, blacksmiths' forges, bales of clothing, officers' valises, &c. All this, so aptly named "impedimenta" by the Romans, and "embarras" by Napoleon, must necessarily shackle the mobility of the army, unless it be regulated in its minutest details. In well-organized armies, all wagons are constructed in a uniform manner, carefully marked and numbered, and entrusted to a special corps of soldiers, enrolled for the purpose, and trained to manœuvre with a precision and discipline equal to any corps in the army. We can hardly overestimate the importance of employing for this service none but tried and experienced men, nor exaggerate the disasters that may arise from leaving the care of it to drivers hired for the occasion, who, without military pride and honor, are apt to be insubordinate, and at the first sign of danger to flee, and seek their own safety in abandoning their equipages.

It is plain that one man alone is insufficient for the various duties involved in the conduct of an army, or even of a division; a certain number of officers is therefore given to the commander-in-chief, in order to assist him in the details of his command, and these officers form what is called his staff. Their duties embrace the whole range of the service of the troops: they transmit the orders from headquarters, and see that they are executed; they regulate the marches; mark out encampments, make reconnoissances, and procure information of the position and movements of the enemy; they receive the

flags of truce, and interrogate the spies; they keep and improve the topographical, statistical, and historical maps and tables, and study and investigate all the details relating thereto; they record the progress and history of the war; correspond with the various departments, and make their inspections, that the general may be accurately informed of the condition of all branches of the service; in a word, they are the intermediary nerves through which the chief communicates the impulse to this large body, called an army; through them he controls its movements, and prevents any faltering which might hinder its progress. The vast number of details belonging to their service, requires a subdivision of duties, and an organization of bureaus, each relating to a special branch, and all under the direction of a general officer, called chief of staff. Next to the commander-in-chief, this officer, when competent, may effect the greatest good, and when incompetent, the greatest harm to the service. He should possess the unlimited confidence of the general, and be thoroughly acquainted with all his plans, to see that they are executed in the same spirit in which they were conceived. It is his duty frankly to express his opinion on the plans proposed, and even to make such suggestions as he deems useful; it being understood that where differences of opinion exist, he must abandon all his preferences, and unreservedly espouse those of his chief, for the slightest misunderstanding between them may entail the greatest disasters. Corps d'armée, or divisions, which, as has been stated, are really small armies, require similar organizations to assist their leaders, but on a smaller scale, their duties and relations being otherwise the same.

An army, thus composed and organized, is intended to fight, and in order to meet the enemy, it must be put in motion. The mobility of an army depends on the physical condition of its tactical units. The will, indeed, gives strength, and

removes even mountains; but, in general, a strong will, with masses especially, resides only in strong bodies. Moreover every movement, whether near or distant from the enemy, requires order, for, without order, there can be no control.

Marches may be divided into route marches and manœuvre marches. The former, which design the concentration of troops on the base of operations, are made over the easiest roads, and permit as much comfort as comports with good order and discipline. The latter, which are executed near the enemy, require the utmost precaution, and must sacrifice convenience to safety.

In all forward movements in the vicinity of the enemy, the first rule is to march in column, and with the largest possible front, in order to occupy the least space, and, in case of an attack, to enable the troops at the rear of the column to advance quickly to the support of those at the head. If the march purposes only a concentration of forces, or some other manœuvre not within the sphere of the enemy's activity (which marches are sometimes called strategical marches), open columns, or columns at half distance may then be convenient; but when the enemy is near, and battle impends, the army marches in close columns, both on the roads and through the adjoining fields. The only case where a march in open column is admissible, in close proximity to the enemy, is when the latter shows himself on the flank; then, the subdivisions are obliged to maintain their respective distances, that, by wheeling into line, they may present front to his forces. But as flank movements are always dangerous, they are resorted to only when absolutely necessary, and generally such dispositions are made as allow the heads of columns to appear first on the field of battle. Hence the necessity of closing up, so as to facilitate and abridge the deployment of the column into line.

Every column is preceded on its march by an advanced guard, whose duty it is to search and explore all suspicious

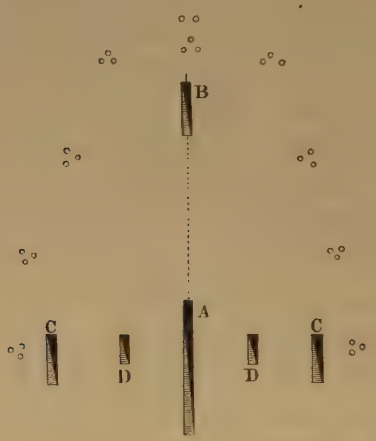
points, to open and repair the road when necessary, to baffle all the enemy's projects, to surprise his main body, or to catch it in some ambush. It gives warning of his appearance, sustains his first attacks, and thus enables the main body to adjust its measures. The advanced guard is in its turn preceded by an extreme advanced guard, and this again by small groups of threes, called scouts. The advanced guard sends out, right and left, other detachments, and these again, groups of scouts, called flankers. It is their duty to search and explore the country, villages, clumps of woods, farm houses, &c.; to examine the outer slopes of the hills that border the road; to pass around thick hedges; to look into the ravines, corn fields, and all places capable of furnishing concealment for the enemy. The strength of the advanced guard necessarily depends on the position and strength of the enemy; in some cases it is as much as one fifth or one fourth of the entire column. It is composed of all arms, infantry, cavalry, artillery, in such proportions as the nature of the country may require, and is, moreover, accompanied by a detachment of engineer soldiers, assisted, if necessary, by hired or impressed laborers, to repair the roads and bridges, and to remove all obstructions that might retard the progress of the columns. They have with them wagons containing the necessary tools, ropes, and timber, and should be mounted, in order speedily to regain the advanced guard, after having finished their work.

The following diagram may give an idea of the formation of an advanced guard. A represents the advanced guard, B the extreme advanced guard, and three groups of scouts, of which the central one is preceded by two other scouts; C, C, represent the detachments which march parallel to the roads, and furnish the flankers, who also go in groups of threes, and in sufficient number to connect with the scouts sent out by B; D, D, are reserves of C, C, by means of which the latter communicate

with A, and from which they derive their first assistance in case of an attack.

The main body also sends out detachments on its flanks, each with its own scouts and flankers, to make sure that noth-

Fig. 1.




ing has escaped or eluded the vigilance of the first, for, as a general rule, it is better when near the enemy to use too many precautions, than to neglect a single one. During the war of the French Revolution, a republican general without experience, having under his orders a long column of infantry, followed a road bordered by a thick hedge. It marched without advanced guard, scouts, or flankers, and there was great want of order throughout the column, which, in consequence, had become considerably elongated. Suddenly the Vendean chief Charrette fell upon its flanks, cut it in two, and dispersed it in a moment. At such times no courage avails; the only resource is in flight. Such are the consequences of imprudence or of the incapacity of a leader.

The equipages of the train are always kept apart from the troops, in order not to interfere with their prompt concentra-

tion, in case of sudden engagement. They therefore follow in the rear, or in as close order as possible, and in two files, if the road is wide enough, under the protection of a strong escort, to prevent their being injured or carried off by some enterprising parties.

A corps, similar to the advanced guard, but not so numerous, brings up the rear of the column, and hence takes the name of rear guard. Like the former, it has its extreme rear guard, its scouts, and its flankers, whose special duty is to watch most vigilantly whether any enemy is pursuing. It follows the main body at a suitable distance, picks up the stragglers and marauders, and furnishes the escort of the baggage train. Thus surrounded by scouts and flankers, who are supported by the detachments from which they emanate, the principal body cannot be attacked without timely notice to prepare itself.

It is evident that an army, when at rest, can no longer disperse at night, or hope for comfortable quarters, as separate regiments may, when marching in the rear of the base of operations. It must remain together with such shelter as it can hastily construct; if, for a short time, in bivouac; if more permanently, in camp. But, whether for a long time or a day only, or even for a few hours, an army is protected, when stationary, as when on its march, by a cordon of troops, called outposts, whose sentries and vedettes are, for an army at rest, what scouts and flankers are for it when marching. Their service is systematically organized, and so arranged that no enemy can come near unperceived, and without an immediate alarm.

We have already seen, that when in close proximity to the enemy the army marches in close column, to facilitate a timely deployment of the rearmost troops in case of attack. For the same reason, when an army is very numerous, it marches its

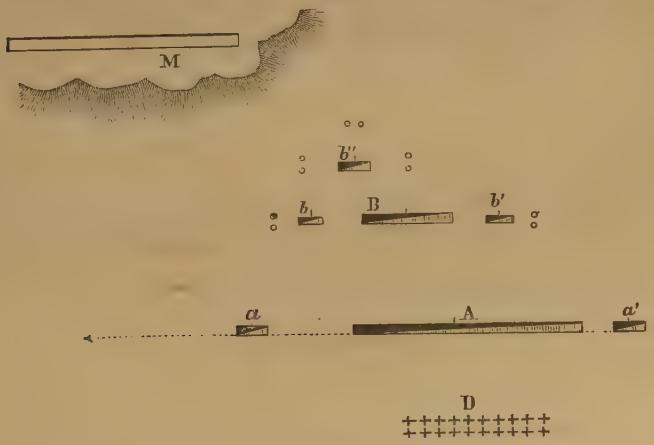
several columns at a suitable distance from each other, and connected by intermediary detachments, to keep up communication between them. Moreover, as each one of these columns is liable to attack, and must defend itself until the others can advance to its assistance, each has its own advanced guard and flankers, especially the outermost, because more exposed than the others. When thus marching in several columns, as certainly it must do if composed of several corps d'armée, the army has, independently of the several advanced guards which precede the different columns, one general advanced guard preceding the whole, and likewise a general rear guard, which forms the reserve. In the accompanying diagram, the central road is occupied by three corps, A, B, C, the first composing the general advanced guard, the second, the centre of the army, and the third, the reserve. The two other roads are traversed by the columns D and E, which bear the same relation to the

Fig. 2.

entire army, as the flanking detachments do to a single isolated column. The reserve artillery, and most cumbersome parts of the train, are in the rear of the column, which is least likely to meet the enemy; supposing this to be E, F will be the place of the latter.

As a general rule, flank marches should be avoided; but if this is impossible, they should be made under strong cover of the exposed side of the column. Usually, it is the advanced guard which becomes the flanking detachment, and receives some additional troops from the main body, as it is now more liable to be attacked in a march forward. It has its own advanced guard, rear guard and flankers, with a larger number of scouts than usual, to render all surprise impossible. The main body keeps but a small advanced and rear guard. The train forms a column marching parallel to the main body, on the flank which is remotest from the enemy, as illustrated by the following diagram. M is the position of the enemy; A the

Fig. 3.

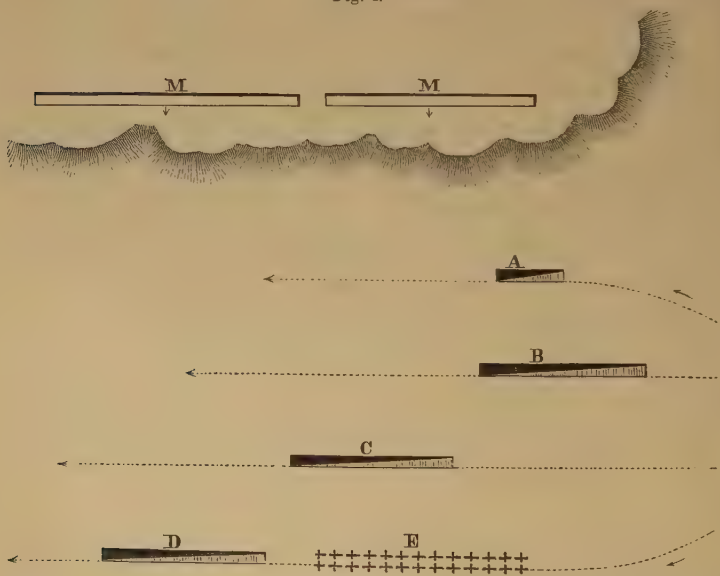



main column, with its advanced guard $a$, and its rear guard $a'$; B is the flanking detachment, with its own advanced guard $b$, its rear guard $b'$, and its flanking detachment $b''$, toward the

side of the enemy. They have scouts only on their right flank, there being no reason for having any on the left. The train D moves on a road parallel to the main column.

When an army executing a flank march is numerous, and the country open enough to allow an advance in several columns, that one which is farthest from the enemy should be foremost, and the others should follow in such a manner as to be drawn up in echelon when facing the enemy, and thus be able to lend mutual assistance. This will appear by a reference to the following diagram. M, M, represent the army of the enemy in position; A, the advanced guard, has here become the flanking detachment; B, C, D are three columns into which the army has been subdivided. If the enemy attacks D, which is first in sight, he is taken in the flank by the other

Fig. 4.




columns; if he attacks the last, then those which precede will be ready to support it. Obviously no place could be found for the baggage, E, more suitable than the one indicated.

The final aim of all these marches and manœuvres is battle; this is the grand issue toward which all must tend. It is the inevitable denouement of the campaign. A battle should be avoided, if the probable consequences of defeat are likely to be more serious than the expected advantages of victory, or if the enemy should occupy an impregnable position. It may be postponed, too, if the troops are not yet ready, or if there is reason to believe that time, fatigue, sickness, scarcity, or discord among the enemy's generals, will do the work of destruction. Under such circumstances, the most ordinary prudence would suggest a resort to means of ruining the enemy, less uncertain than that of conflict; but these circumstances rarely occur, and considering the immense cost of maintaining an army in the field, and the unavoidable desolation it causes in that part of the country which is the seat of war, a great battle is, almost without exception, the shortest way to a solid peace: for, if successful, we can dictate terms; if unsuccessful, by the esteem our valor has inspired, we may secure good conditions; and in either case, honor, which is the supreme wealth of a nation, remains unsullied.

However, one does not determine upon such a momentous act, without using every effort to compel a victory. All troops within call, which are not indispensable for the occupation of important points, must be brought together, inasmuch as upon a single battalion, more or less, may depend the fate of the day. With plenty of troops, we first engage only as many as are necessary to keep our opponent in check, and with the rest, we may manœuvre on his flanks, or form reserves, to be brought successively into action. The great aim should be, so to dispose the troops as to make victory most fertile in consequences and results; such as seizing upon the enemy's line of operations, separating him from his base, his depots, his reënforcements; or, if local circumstances preclude these, to

assume such an order of battle as will compensate for our want of numerical superiority, and ensure to us, in a complete rout of the enemy, the advantages of which we were originally deprived.

An army, invariably drawn up in the same manner, must surely be defeated by one changing its order of battle according to circumstances. Hence no order of battle is unalterably fixed; it must yield to local considerations, to the circumstances of the moment, the forces and position of the enemy, the kind of troops which compose his army, the character of their chiefs, &c. The very order which effected victory in one battle, might induce defeat in another. As a general rule, however, the troops are placed in several lines, so as not to expose them all to the first shock, but to allow a part to advance to the assistance of the rest, whenever it may be necessary.

Ordinarily, an army is drawn up in two lines, mutually supporting each other. Infantry and cavalry are distributed over both, the latter most frequently in the second, but the artillery invariably in the first line, and even in front of it, in order to have a free range in all directions, and to rake with an oblique fire any column advancing to attack. The first line is so disposed as to enter into action as soon as the forces have come near enough to use their small arms. Until then, nothing is done but manœuvring, marching and countermarching to and fro. The second line avails itself of every irregularity of the ground, to remain under shelter, until its coöperation becomes necessary.

In the rear of these two lines a strong reserve of all arms is posted, at a suitable distance, ready for any emergency. This reserve, which is composed mainly of cavalry and artillery, is under the immediate orders of the commander-in-chief, to be available at a moment's notice. It is with the reserve that he reënforces certain parts of his order of battle; it is with his

reserve cavalry that he opposes any movement of the enemy on his flanks, and endeavors to outflank him; it is with the united reserves that he gives the last blow, which must decide victory; or without at all changing his lines of battle, checks an attack which otherwise might prove fatal. And it is for this last purpose especially that the reserve is of the highest importance; for it is extremely dangerous to manœuvre under the fire of the enemy, and to execute any movement with the troops of the line, which by misinterpretation may strike them with terror. More than one conflict has been lost by tampering with the order of battle during the action; a reserve is therefore absolutely necessary, even although it may weaken the numerical strength of the lines.

The battalions in the front line are always deployed, to lessen their exposure to the enemy's artillery, and to be ready to use their fire the instant occasion offers. Those, on the contrary, in the second line, are formed in close column, to be ready, by a rapid forward movement, to pass through the first line, and charge the enemy; or in order to keep open intervals, through which the first line may easily pass, in case of any retrograde movement. However, this formation into close columns, presupposes a ground offering natural shelter for these masses; otherwise the cannon would make fearful havoc in their ranks, unless they were withdrawn so far as to cease to be a support to the first line.

The troops composing the same division should always form part of both lines. Thus a division, consisting of four brigades, would in the general disposition of the army, have two in the first, and two in the second line. There is thus but one interest between these two lines; obeying the same chief, they will support and defend each other with more spirit, the honor of both being identical. It is especially in intersected country, that this position is advantageous, since it greatly

facilitates the command of a division, by reducing the extent of its front to half, and otherwise renders it more yielding to local circumstances.

Tacticians give different names to the order of battle, according to the arrangement of the troops, both in regard to themselves and to the enemy. In regard to themselves, the order may be either continuous or with intervals; in regard to the enemy, parallel or oblique. All of these arrangements occur, in greater or less degree, when an army is actually engaged with the enemy; but, in order to understand perfectly what is going on, a distinct knowledge of each one severally is absolutely indispensable.

The parallel order, as its name indicates, is that in which both armies are so drawn up, confronting each other, that throughout their whole extent each soldier has, as it were, his antagonist before him. This order is the most primitive of all, and requires but little art, success depending almost entirely on the individual strength, courage, and tenacity of the combatants. A simultaneous effort is made all along the line, and whichsoever is victorious, obtains no doubt a complete success; but, on the other hand, in case of reverse he loses every resource. Other things being equal, victory in such order is decided beforehand in favor of the most numerous battalions, especially if their leader employs his surplus in mass, against a weaker part of the enemy's line.

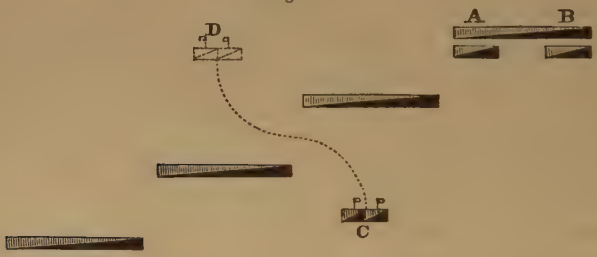
If, however, one is inferior in number, by bringing forward one wing, reënforced to the uttermost, and holding back the other, from which is borrowed as much strength as can be spared without compromising it, there is yet a fair chance of success, by crushing the enemy on one point, and keeping him in check at all the others. If the real purpose is skilfully masked by false attacks; if all the columns are simultaneously deployed at the very moment the engagement begins, the

enemy will have no time for counter-manœuvres, or for sending sufficient aid to the attacked wing, and will most probably be vanquished. It is thus that art may make up for numbers, and that a smaller army, well commanded, may defeat a larger one, whose chief, through ignorance or inability, has not concentrated large forces on the decisive point. Besides, too, if the battle be lost, the army may yet effect a retreat, under the protection of the troops which have been but slightly engaged, and have not yet suffered severely. This order, called oblique order, is therefore exceedingly useful, inasmuch as it offers every chance of success for the attack, and provides every possible means for the safety of the army in case of reverse.

If we now compare the continouous order with that with intervals, whether parallel or oblique, we will easily perceive that the first is suitable only in large open plains, free from obstacles, and where there may always be cavalry on the wings; whereas the order with intervals will suit every description of ground, and allow cavalry to be employed anywhere, in the centre as well as on the wings. If, in a continuous order of battle, cavalry were placed in the centre, it would be deprived of all its advantages, for being obliged to keep in line with the infantry, it would lose its mobility, which is its principal, indeed, its only means of success; or what is worse, exposed to the fire of the enemy, without power to answer it, it must either be decimated by remaining in line, or retire to seek for shelter, and thus leave a large opening, which would probably induce the loss of the battle. No doubt the cavalry might advance; but in charging on infantry which is yet intact, they would in all likelihood be dispersed or destroyed, and thus also leave a gap in the order of battle. For this reason it is that intervals are left for the cavalry and artillery to pass through at the proper moment, and wherever their services may be required. But that these intervals may not tempt the enemy, nor offer

him any advantage, they open, not in front, so as to present vistas to him, but laterally, and thus the order of battle seems to those confronting it, unbroken and continuous. This order is called oblique in echelons, and is illustrated in the following diagram, in which A, B, represent the echelon nearest the enemy, strongly reënforced; the dotted line C, D, a forward movement of cavalry through one of the intervals.

Fig. 5.




All these and other dispositions depend, of course, on the final reconnoissance, which is made by the general himself. Occupying some eminence, and aided by a powerful glass, he examines all the important details; or rapidly passing over the battle field, he casts a last glance on the enemy's positions, always accompanied by the chiefs of the several corps d'armée or divisions, to whom he communicates his views, and gives his last instructions, confirming or modifying those previously transmitted. Meanwhile the troops prepare for the conflict; a last address, intended to stimulate their ardor and rouse their enthusiasm to the highest pitch, is generally read to them, and they start for the scene of action.

When the different columns have arrived on the field of battle, when all occupy the places assigned to them, the general-in-chief gives the signal of action, and each of his lieutenants carries into effect the orders he has received, but with a wide latitude of discretion, respecting the mode of execution.

All know, for instance, that the right will make the main effort, that the left must engage the enemy but feebly, merely to keep him occupied and check his advance. They take their measures accordingly, and direct their movements and manœuvres toward the common object. The general-in-chief cannot be everywhere; they must, therefore, compensate for his absence, by their exact knowledge of his intentions, and in critical circumstances, order such movements as they think will best effect the general purpose.

The action is generally begun by skirmishers, who are thrown forward a thousand or fifteen hundred yards; here and there supported by more compact bodies, and by some light batteries, they endeavor to arrest the enemy, until the columns have had time to deploy; or else, if an attack is intended, they cover the columns of attack, which move forward protected by their fire; they repel the skirmishers of the enemy; reconnoitre his last dispositions; discover the vulnerable parts of his line of battle, and at the same time keep him uncertain of the real point of assault, which will be unmasked only after the entire deployment of the columns, and when the attack is, as it were, in full progress of execution.

Meanwhile comes the moment when the skirmishers must retire, to allow their own columns to come into action, or because they are no longer able to cope with the enemy, and lose ground; they should yield only inch by inch, and avail themselves of every possible shelter from the enemy's fire. When they have thus retreated to within a short distance from the line of battle deployed behind them, they rapidly slip through the intervals of the battalions, and rejoin their respective regiments, or rally in the rear, if forming a separate corps by themselves.

As soon as the front of the army is unmasked, the first line opens its fire; the artillery first, and, when the lines have come

near enough, then the infantry. This fire is maintained until fatigue, severe losses, or other causes, begin to relax the steadiness of the troops. Now is the moment for the second line to advance, and form the columns of attack, which pass through the intervals, and with the bayonet rush forward upon the enemy. If his line is broken by this movement, it would be imprudent to pursue, without having restored order in our own ranks, which must necessarily have suffered from the shock; but as soon as this is done, and it should be done quickly, they march against the second line, whose order is likely to be deranged by the repulse of the first. Meanwhile the first line should be completely replenished by borrowing from the reserves. It is only after decisive victory on the whole line that the pursuit requires less caution; and then it should be made with impetuosity, in order to convert the retreat of the enemy into a rout.

If, on the contrary, one is obliged to yield, let him do so gradually, and in the greatest possible order, ready to take instant advantage of the least fault the enemy may happen to commit. In every case the second line must come up to the assistance of the first, and in replacing it, take the initiative in the attack. This forward movement will revive the courage of those that have suffered, and banish all thoughts of retreat; it will arrest the enemy, and may even repulse him. It is thus that ofttimes the same ground has been taken and retaken, over and over again, by brave troops.

The cavalry, and especially the divisional cavalry, charges at any stage of the action; for it must never lose an opportunity of darting upon an unsteady infantry, or one that presents its flanks; of seizing upon an ill-supported battery; of neutralizing a charge of the enemy's cavalry, &c. It is for this reason that there should be intervals all along the line, to allow it to debouch and snatch the favorable instant to fall like lightning

upon the enemy, whenever affording it a chance. In general, however, it is more advantageous to employ cavalry as late as possible during the action, because its services are more valuable at the end of the battle than in the beginning. It should therefore be kept in good condition to pursue the enemy in case of success, or to dispute his advance in case of reverse. The heavy cavalry, especially, should be kept in reserve, since they must deal the death blow that decides the victory. It is the light cavalry which joins the skirmishers at the commencement of the action; it manœuvres its squadrons during its progress; and is let loose in pursuit of the enemy, when at the end of the day the latter covers the field with his scattered battalions, and his troops are in full flight. Then they rush forward as foragers, cutting down the foe wherever he would resist; making prisoners, increasing the disorder, and thwarting every effort to re-form.

The heavy cavalry is brought into action only at the decisive moment, and by its terrible shock is designed to complete what infantry and artillery have begun. It must remain as united as possible, even after success; it directs its efforts against everything yet standing, and overthrows all it finds in its way; and when it has swept the field of battle clean, it detaches a few squadrons, to support the light horse, in pursuit of the enemy. But it is especially when the battle is lost, and when retreat is unavoidable, that the reserve cavalry is called upon to render the most valuable service. Formed in large masses, it rushes to the attack of victorious troops, and compels them to look to their own safety; thus checking their advance, and giving the army time to gain some favorable position. At this juncture all depends upon the exertions of this powerful arm. If, during the earlier part of the day, it has been taken care of, it is only to do the better service now; every time it is repulsed it must rally and charge again, until, at last, night allows it to

quit the field of carnage and of honor, to join the army, which, by its intrepidity and self-sacrifice, has been enabled to reach some new position, where it may try its fortune again.

As to the artillery, it thunders during the whole battle; often it begins before the skirmishers, and it fires the last shot when victory is already proclaimed. Still, that its ammunition may not fail, it should be used with proper economy, and to the purpose. The artillery is sometimes grouped into large and powerful batteries, against certain points of the enemy's line, to effect wide breaches, through which the cavalry may rush. Although it may not achieve greater execution in this way than if it were distributed along the line, its moral effect is more considerable. The soldier is terror stricken when he sees death multiply itself on a limited space, and mow down whole battalions. He becomes unsteady, loses discipline, and if the cavalry charge at that very moment, he cannot withstand it.

Horse artillery is brought into action from the very beginning of the battle. This kind of artillery must not hesitate to be venturesome; for its lightness allows it to escape pursuit. Generally accompanied by a few squadrons for its support, it hovers on the flanks of the enemy, advances, retires, constantly shifts its position to avoid the shot of the enemy's batteries, avails itself of every opportunity to fire, and is off again. As soon as victory is assured, the horse artillery rushes forward with the cavalry to perplex the enemy's retreat, alert in embarrassing him, and active to increase his disorder. Cavalry and horse artillery are inseparable companions in war; and with mutual confidence, and common rapidity, they may attempt the most hazardous and boldest enterprises.

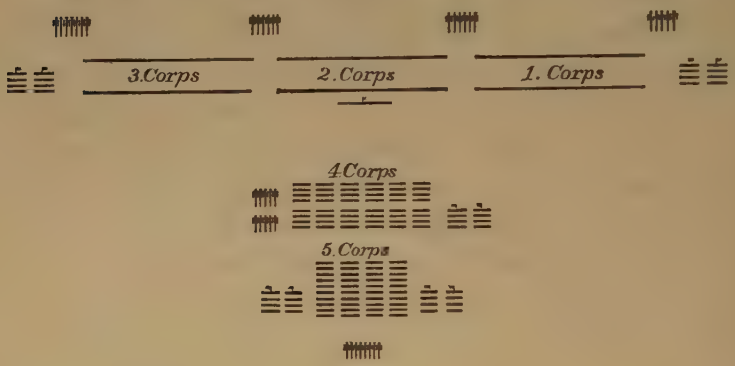
The mounted artillery has no definite place in battle. It gathers in large batteries, either in the line, in front of the intervals of divisions, or on the wings; in short, wherever it

finds a favorable position, and where it is not in the way of the infantry. A small eminence, whence it commands the battle field, is especially advantageous, provided it is not so high as to cause a plunging fire. The smaller caliber is placed in the more advanced parts of the battle field, the heavier in the more remote; since its farther range and greater precision render it effective at a larger distance. For this reason there are generally two calibers of field pieces, the heavier of which may do good service, also, against redoubts, strong walls, barricades, abatis, &c. Early in the engagement, whilst the atmosphere is yet clear enough to allow a correct appreciation of distances, the heavy guns open their fire from afar; but when, in the course of the action, dust and smoke envelop the battle field, their effect is necessarily limited to a narrower compass. Under these circumstances, firing at large distances would cause more fright than damage. When the artillery has silenced the enemy's guns, it turns its fire upon the infantry, to prepare the work for the cavalry, and likewise upon any cavalry, which should exert itself too boldly. Its effects on masses are most destructive; it keeps them at a distance, prevents their deployment, or utterly destroys them, pouring forth solid shot, shells, grape, and canister, and everywhere spreading consternation and death.

Such, in brief, are the main features of the great game of war, as now generally practised. Though its rules may be so simple that every one can understand them, and even reason on their subject, their application is nevertheless exceedingly difficult, inasmuch as it is influenced by an endless variety of details and circumstances, that require, on the part of the general-in-chief, not only a most extensive knowledge, but also rare tact and penetration. A few additional remarks will render this more apparent. Until now, we have purposely delayed to speak of the physical constitution of the battle field, lest we

might confuse the minds of our readers with too many details at the same time; it is not, therefore, unlikely that some may have pictured the action as taking place on a level plain, and an order of battle corresponding with the following diagram, which is indeed the best mode of considering the subject in the abstract.

Fig. 6.




Such primitive formations, however, present only a general plan, whose execution depends entirely on circumstances, and especially on topographical considerations. If a correct alignment were all that was attended to, the irregularities and undulations of the ground might either prevent the use of our fire, or expose us too much to that of the enemy. It is evident, therefore, that the front of battle must be modified according to the natural features of the locality. This front will include all obstacles within its scope, defiles, brooks, marches, woods, commanding heights, villages, farms, churches, &c., &c., forming so many points of support, of which the troops avail themselves to strengthen their position, and giving to the whole the appearance of a moveable line of field works, of which the obstacles are the salients, and the troops the curtains. Indeed, it is in more than one particular, that the art of fortification

finds its application in the selection and defence of positions on the battle field.

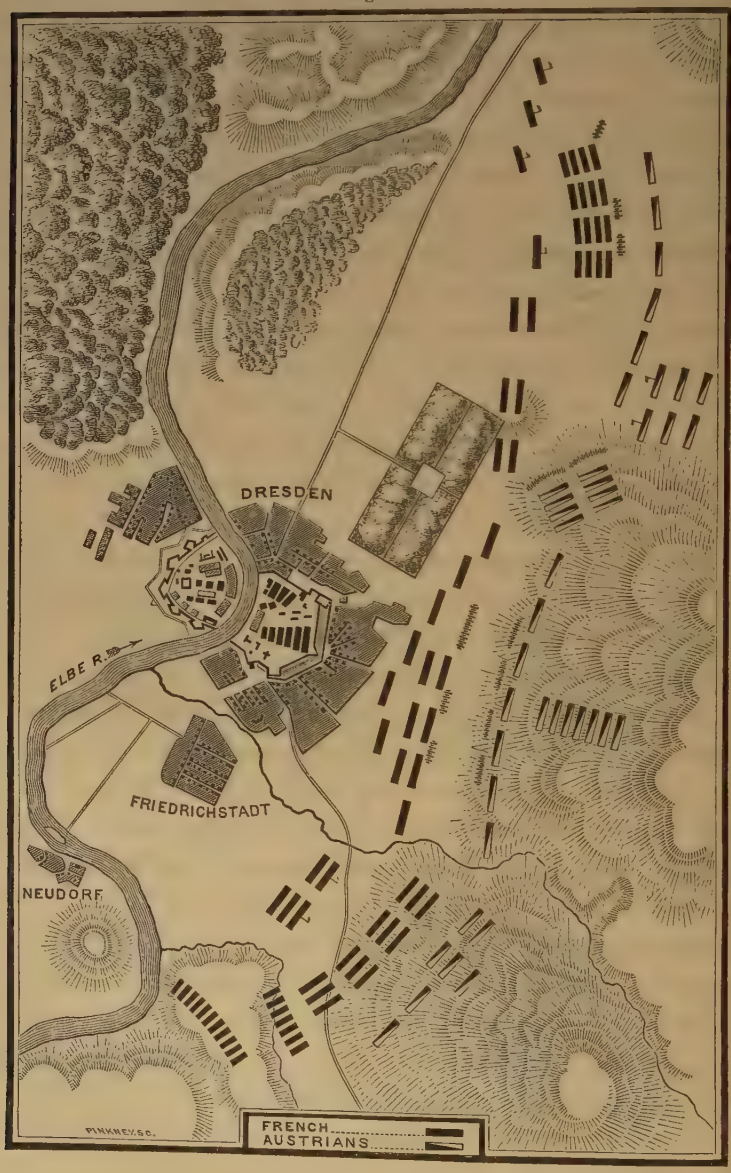
In hilly countries, the first line usually moves half way down the slope, to profit by the declivity, which enables it to note the avenues, to see the approaches, and to command the enemy. In such cases, the second line forms close behind the ridge, and the reserves, on the plateau, or on the declivity in its rear, where, being out of sight, they are perfectly safe. Where the front of battle crosses a ravine, commanded by two neighboring heights, if these be occupied by batteries to prevent the enemy's advance, an interval may be left in the order of battle. When certain positions are difficult of access, it is enough to hold them with a single line of troops, or even of skirmishers only. Such places, on the contrary, as are likely to become points of attack on account of their importance, often have three or four lines posted behind them, to enable them to take the offensive.

For these various reasons, the second line is rarely kept parallel to the first, nor is it necessary; some portions are nearer, some farther off, according to the shelter they find, and the whole is more or less parallel, more or less oblique, according to the nature of the ground on which they move. Sometimes, even behind the points of attack, the line presents two oblique directions, forming a reëntering angle, in order to receive the enemy's columns with a cross fire, and, by heavy losses, compel him to fall back. Cavalry, which in open country is placed on both wings, is withdrawn behind the infantry in a third line, if the wings are covered by natural obstacles, and when the ground is unfavorable for its action. In some exceptional cases, however, as at Solferino, for instance, mentioned in the preceding chapter, it may become necessary to employ it even in the first line, in the very centre of the order of battle.

Such are the principal modifications effected by topograph-

ical influences in the primitive order of battle, which must be considered only as the original type, with which the actual

Fig. 7.



order of battle is made to conform, as much as circumstances will permit. A battle, moreover, is not an isolated fact, but the final result of a number of carefully calculated strategical combinations, of which means, time, distances, and often a series of previous combats and engagements are the principal elements, and which, not less than local circumstances, exert their influence upon this ultimate denouement. The map on the preceding page, representing the position of the French and Austrian armies at the battle of Dresden, is designed to exhibit the many modifications which may result from these controlling influences, and show how the general order of battle, viewed in its details, may present all the various orders of battle described above.

If all this be well understood, it is scarcely necessary further to remark, that although the enemy may obtain partial advantages on secondary points, the battle is nevertheless gained everywhere, if gained on the decisive points. At Wagram, for instance, from the central position, whence Napoleon directed the conflict, he was watching with his glass the progress of the two partial attacks of Marshals Davoust at the right and Macdonald in the centre. An aide-de-camp of Massena, who commanded the left wing, announced to the Emperor that at the extreme left the Austrians menaced the bridges. Shortly after a second hastened to inform him that the Marshal was losing ground. A third reported that the division of Boudet had lost its guns, and had fallen back behind its intrenchments. The Emperor made no reply; he continued to watch the effect of the batteries of Davoust, in the direction of Neusiedel; then, coolly turning to the aide-de-camp of Massena, said, "Go and tell the Marshal to attack, and that the battle is won."

# CHAPTER III.

## RIFLED FIREARMS.

Having acquired some general notions of the art of war, and of the services which cavalry is to render on the battle field, it would hardly satisfy our readers to proceed to details without first also considering to what extent its efficiency is likely to be effected by the late improvements in firearms, whose reputed destructiveness is imagined by some to seriously impair, if not totally annul, its usefulness in war. Certainly, a matter of so much moment may not be left unnoticed, nay, it even requires to be dwelt upon at some length; for, if the aim of infantry has really become so accurate as to ensure inevitable damage to man and horse, it would be idle for us to enter into any further discussion on the subject of cavalry; but if, as we believe, the question is by no means so well settled as to preclude all further debate, we would offer the following remarks, to put our readers in the way of investigating the subject themselves, and enable them to form their own conclusions.

We may as well at once admit that there is probably but little exaggeration in all the marvellous accounts which are current concerning the new rifled firearms; and that we may form a correct idea of the extraordinary range and accuracy

which are now obtained, let us refer to Wilson's "Rifles and Rifle Practice," which clearly and concisely conveys all the information that can be desired on the subject. Speaking of rifle practice in Austria with the carbine à tige used in that country, whose range and accuracy are among the most remarkable, it tells us that "firing at 820 yards, 95 per cent. of the balls struck the target; at 984 yards, 65 per cent.; at 1,230 yards, 49 per cent.; the target being 6 by 55 feet. At 246 yards, of 100 balls, the entire number struck within a circle of 6 inches' diameter; at 1,640 yards, the ball pierced three deal boards, each 1.02 inch thick, placed a foot apart, one in rear of the other."

It also cites an interesting experiment made with the Enfield rifle in England, at the school of instruction in musketry at Hythe, to ascertain the effect of a platoon of skirmishers firing upon a battalion of infantry in column. "For this purpose, two targets were placed, one in rear of the other, at a distance apart of 50 yards, representing the front and rear companies of the column, which was supposed to be 700 strong. The front target was of iron, in order that balls striking it might not pass through the second. The skirmishers were marched out in front of the target, one half ordered to fire ten cartridges from a halt at a distance, unknown to them, of 820 yards; then advance, firing until they had fired ten; then to halt, and fire ten more; this last distance being 550 yards, and unknown to the men. The second half were ordered to fire from this last distance ten cartridges; then to retreat, firing until they should have fired ten; then to halt and fire ten: these distances being the same as in the first case, and unknown to the men. The number of cartridges consumed was 1,050; of this number, 379 struck the first, and 238 the second target, or 58 per cent. of the whole number struck the two targets, representing the head and rear of the column."

Another experiment was made at the same place, with the view of ascertaining the effect of the fire of a company of skirmishers upon a field piece of artillery. "The company numbered 60 men, only 23 of whom had been well instructed in target practice. The target consisted of a group representing the piece of artillery going into battery—six horses in harness, and one for the chief of the piece, three drivers, eight cannoneers, one chief of piece—in all, twelve men and seven horses, the size of life. The caisson was represented by an iron target, upon which were traced the outlines of six horses; but the drivers and cannoneers were not represented. The company deployed as skirmishers at a distance unknown to the men, of 610 yards, and began to fire at the signal 'commence firing,' and continued two minutes, when the signal 'cease firing' was given. Two cartridges per man had been fired." The following were the results:

| | | |
|---|---|---|
| Piece and Limber. | Number of horses struck, 6; balls struck, 22 | |
| | " men " 7; " " 7 | |
| Caisson, 50 yards in rear. | " horses " 5; " " 8 | |
| | No men represented with the caisson. | |
| | Total number of balls struck, | 37 |

A second fire was delivered at 810 yards in the same manner, except that it continued for three minutes. The men of the front rank fired three cartridges, those of the rear two.

| | | |
|---|---|---|
| Piece and Limber. | Number of horses struck, 5; balls struck, 16 | |
| | " men " 6; " " 8 | |
| Caisson, 50 yards in rear. | " horses " 5; " " 10 | |
| | No men represented with the caisson. | |
| | Total number of balls struck, | 34 |

The sketches accompanying these statistics show one horse struck by as many as twelve balls; and the infantry target,

which is riddled with shot, shows in a space not larger than 2 feet by 6, the marks of thirty-four balls. Experiments made in France, on a large scale, as well as those made elsewhere, all exhibit the superiority of the rifled carbine over the old smooth-bore musket, and all in nearly the same degree. Truly, this is no cheering prospect. Still, upon close inspection, the effect of these weapons proves to be less dreadful than it would at first appear. The horse, for instance, that was struck by twelve balls, would probably have dropped with the first, and the rest would then have been only waste ammunition. So with the thirty-four balls on the infantry target. We do not believe that there is a case on record, where any man was ever so perforated; and since the result of a battle depends not so much on the number killed, as on the number frightened away, we may doubt whether a living battalion would have stood the fire as long as an iron target, not liable to fear. Nor is it likely that human cannoneers and infantry could have shown the same forbearance that these targets did; and this also might have somewhat disturbed the aim.

These experiments are all interesting enough, and must be resorted to, to ascertain what can be done, though they can never be relied upon to foreshow what will be done in the presence of an enemy. We may well admit the superiority of the new over the old firearms, now everywhere abandoned; yet we should not exaggerate the dangers arising from their use, nor fancy that because their range has trebled, and the probability of their hitting a target mark has increased in the same ratio, whole armies must therefore be mown down by them in a few hours, as wheat before the reapers. Things are otherwise on the battle field; firing at passive targets and firing at armed men are entirely different affairs, and in war practice often plays strange pranks with theory. Undeniably, firearms will accomplish more than ever at the opening of a combat;

but for the very reason of their murderous effects, the troops will be anxious to rush to a speedy grapple, for it is against human nature to remain passive and expectant, when some gallant move promises even a bare possibility of equal gain, without going through the horrors of a long and bloody conflict. Those who have witnessed protracted and hotly contested combats, know how the morale of troops suffers when the result of their efforts is not soon manifest. If, under such circumstances, their attention is not drawn off by some impressive move, and their confidence in final success is not maintained or restored, their heroism will give out, and yield to the instinct of self-preservation.

Moreover, if a position is to be carried, unless the enemy abandons it, there must necessarily be a hand-to-hand encounter, and experience has shown that with brave men, the quickest and safest way to dislodge a foe is at the point of the bayonet. During the last war in Lombardy, the Austrian General Stadion, passing the Po to make a reconnoissance toward Montebello, met there the division of General Forey, who, not expecting the enemy, was unprepared for battle. The French battalions speeding to the scene of action, came on hurriedly one after another, some on foot, some by railroad, provided with only a few cartridges, before an enemy splendidly armed, and numerically much superior. Under these circumstances, to equalize the contest, they had no other resource than a charge with the bayonet, which resulted in the total defeat of the Austrians, who fled, leaving behind a large number of killed and wounded. A few days later, at Palestro, the Third regiment of Zouaves, at the head of the Piedmontese army, with Victor Emanuel in their midst, determined the success of the day, by a similar charge made under similar circumstances. Later again, at Magenta, it was the bayonet which brought in seven thousand prisoners. Finally, at Solferino, it

was the bayonet that settled the day. After five unsuccessful assaults, the French Emperor, astonished at the obstinate resistance of the enemy, went himself to the spot to lead the troops to combat. Animated by his presence, all the corps which had already taken part in the action, and which had been decimated by the terrible fire of the enemy, zouaves, chasseurs, grenadiers, voltigeurs, led in mass by officers of all arms, indiscriminately rushed to the attack, and by a desperate effort carried, at the point of the bayonet, the position which the Austrians had considered impregnable.

During this war, both armies were provided with improved firearms, and we have seen the skill of the Austrians as marksmen; moreover, the French had rifled cannon. According to theory, the carnage must have been dreadful, and the mortality greater than on any previous occasion. But do we find it so? Quite the contrary. A military writer already quoted, the author of "Die Kavallerie der Jetztzeit, etc.," has taken the pains to ascertain the proportion of losses in killed and wounded, sustained by the various armies during the wars of the Empire, in which smooth-bore muskets were used, and during the late war in Italy, when rifled arms were employed. His investigations give the following results: At Austerlitz, the loss of the French was 0.14 of the entire force, that of the Russians, 0.30, and that of the Austrians, 0.44; at Wagram, the French lost 0.13, the Austrians 0.14; at the Moskowa, the French 0.37, the Russians 0.44; at Bautzen, the French 0.13, the Russians and Prussians 0.14; at Waterloo, the French 0.36, the Allies 0.31; at Magenta, the French 0.07, the Austrians 0.08; at Solferino, the Franco-Sardinians lost 0.10, and the Austrians 0.08. Thus at Magenta, which was the scene of most deadly conflict, and at Solferino, where two armies, for more than twelve hours, tenaciously disputed the victory, we find that the losses on both sides were actually less than at the

least bloody battles of the Empire. Now this was not for lack of skill or ability, for never did the Emperors of France and Austria possess better troops. Nor can it be said that they shunned fight; never, on the contrary, was the bayonet more vigorously used on the field of battle, and yet never were the losses smaller than on this occasion.

Marshal Saxe said it took a man's weight of lead to kill one in battle. General Gassendi allows 3,000 cartridges for every man killed or wounded. At Solferino, the Austrians fired about 8,400,000 cartridges, which killed about 2,000 French and Sardinians, and wounded some 10,000 more. On an average then, one shot in seven hundred took effect, and one man was killed for every 4,200 shots fired. Comparing these results with the target firing at Hythe, we find a marked difference. To account for this, we must recur to principles. We will, therefore, briefly review so much of the theory of Projectiles as may enable us to understand the general laws on which the art of rifle firing depends; after which we will reduce theory to practice, and see what are the disturbing causes that interfere with its successful application. We shall thus be better able to ascertain the amount of danger to which the soldier is exposed, and how far he may brave it with some chances of success.

It is a familiar principle in Mechanics that a body in motion will continue so with unaltered velocity, unless some resisting force lessens its velocity or stops its motion. Furthermore, it will continue in the same line or course of motion, unless some resisting force changes its direction. A bullet, therefore, projected from the barrel of a rifle, will continue with the same velocity and in the same line, unless it meets some resisting force to check the one or change the other. Now, if we trace the course of a bullet projected from a rifle, we will find it acted upon by three forces, namely:

1. The propelling or projecting force of the gunpowder, which gives it motion at a given velocity in a given line.

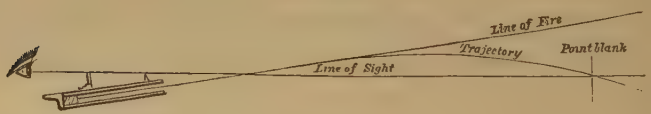
2. The resisting force of the air, which constantly tends to check its velocity.

3. The resisting force of gravity, by which the bullet is drawn toward the surface of the earth.

When the bullet first issues from the rifle, the velocity imparted to it by the explosion of the gunpowder is so great that it almost wholly overcomes the two resisting forces, and therefore, for a short time it proceeds in nearly a straight line. But, as it continues its course, these two forces act more powerfully; the velocity is diminished by the resistance of the air, and the force of gravity attracts the bullet more strongly toward the earth.

Thus the general rules of taking aim and firing, applicable to the rifle as well as to all firearms, are founded on the relations existing between three imaginary lines: the line of sight, the line of fire, and the trajectory, shown in the following figure.

Fig. 8.




The line of sight is a straight line, passing from the centre of the eye through the centre of the back sight on the rifle, and over the centre of the front sight near its muzzle, to the point to be struck.

The line of fire is a straight line, drawn through the axis of the barrel, and extended beyond the barrel to any supposed distance. It is the line along which the centre of the bullet is directed, and which it would never leave unless acted upon by other force than that of the gunpowder.

The trajectory is a curved line described by the ball in its progress through the air from the rifle to the object.

In tracing the course of the discharged bullet, it will be seen that the line of fire and the trajectory are coincident for a short distance from the muzzle of the barrel; the line of fire continuing in an uninterrupted straight course, and the trajectory falling below the line of fire and describing a curve. The propulsive force, by which the bullet is driven out of the rifle, is at first sufficient to overcome the force of gravity, and the bullet follows the straight line of fire or projection, as it is sometimes called. But gradually, as the projecting force is counteracted by the resisting force of the air, the bullet becomes more subject to the force of gravity, and forms a curved line until it reaches the earth.

That which principally enables the projectile to strike the mark, is the regularity of its movement through the air; but this is affected by so many modifying influences, some of them involving such abstruse mathematical calculations, that it is not desirable, even were it useful, to discuss them here. We shall, therefore, treat the subject in a general and practical manner, which is all that will be requisite for our present purpose.

We will begin with supposing that the projectile is propelled through a vacuum, and will afterward consider what general changes take place in the direction of the bullet, when fired, as is always practically the case, in the open air. A bullet fired in a vacuum is subject to the action of only two forces, namely, the projecting force, which tends to propel it with a uniform velocity in the line of the axis of the barrel, and the force of gravity, which warps it from this line, and draws it toward the centre of the earth with a continually increasing rate of motion, so that the bullet, not being able wholly to obey either of these forces, follows the line of the trajectory, which lies between the line of fire and the earth.

The effect is different, however, when a bullet is fired in the open air. The atmosphere which surrounds the earth, although an impalpable fluid, is nevertheless capable of offering resistance to whatever is pressed against or passes through it. We feel this sensibly when we run quickly, or move through it rapidly on horseback, or better yet when drawing along an open umbrella. It consists of very small particles which are compressed by a body passing through them, or in other words, are forced into a closer mass, and therefore require corresponding force to remove them, and overcome their resistance; and the greater the velocity of the body, proportionately greater is the resistance it encounters.

The effect of this resistance on a bullet is so considerable, that in some cases it amounts to ten or more times the weight of the ball, so that a missile, which would otherwise reach a distance of 10,000 yards, may, by the resistance of the air, be stopped at 1,000 yards or less. This resistance, therefore, is an important element in determining the curve of the trajectory, and consequently in deciding the range of the rifle. It occurs principally in a line directly opposite to the line of motion of a body; but, besides this, there is a resistance offered by the friction of the particles through which that body passes. The sum of these resisting forces affords a material check to the velocity of the body, and in time destroys it altogether.

The formulæ for calculating the trajectory are so complicated and include so many conditions, that they are used only to demonstrate abstractly what takes place, whilst experiment alone is depended upon to determine its modified curve. For our purpose it is sufficient to notice, that the resistance offered to the rifle bullet depends on the three following conditions:

1. The density of the air.
2. The velocity of the bullet.
3. The extent of the bullet's surface.

The lines above mentioned are, of course, supposed to be in the same vertical plane, called the plane of fire, and form two angles, the angle of sight, formed by the line of sight and the line of fire; and the angle of fire, formed by the line of fire and the horizontal. The point blank is, as we have seen in the diagram on page 116, that point in the line of sight where the trajectory intersects it the second time.

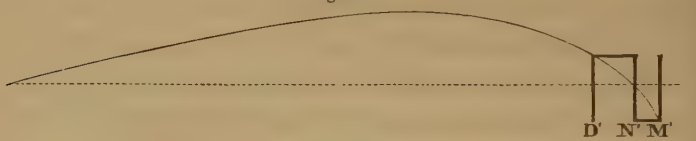
The point blank, point blank range, or simply the range of an arm, depends on the angle of sight. If, for example, it be known that the trajectory, at a certain distance, descends a yard below the line of sight, it will be necessary, in order to strike an object at that distance, to direct the line of sight, or in plain words to take aim, a yard above the object. In doing so, the trajectory will rise with the line of sight and pass a yard below the point sighted; that is, will exactly meet the object. Now, this can be done either by raising the muzzle or lowering the breech of the rifle; but since the former would obstruct the view of the object aimed at, the latter is the only practicable mode, and for this purpose there is placed on or near the breech a sight which can be raised or lowered, and thus increase or lessen the angle of sight. This contrivance is called an elevating sight, and by means of it we can make the trajectory cut the line of sight at varying distances; in other words, can vary the point blank or range of the rifle.

The trajectory thus defined is not exactly such as would be described by a bullet fired from a rifle, but it resembles it so closely that it serves all practical purposes. As the trajectory is a curved line, it is obvious that a man struck at the waist by a bullet, would have been struck in the head, if he had been nearer, or in the feet, if farther off. But since the curve is more or less flattened, as the point blank is more or less remote, varying from an almost horizontal to an almost perpendicular line, it follows that the space in which the man is in danger,

decreases as he recedes from the rifle, till finally, what is called the dangerous space becomes very small. This will be made clear by a reference to the following diagram, in which the Figures 9 and 10 represent two men, N and N′, struck at the waist. Had they moved forward to D and D′, they would have been struck in the head, or backward to M and M′, in the feet. The dangerous space D, M, is much greater than D′, M′, which shows that a correct estimate of distances is one of the most important points to be attended to in rifle firing, since the error of a few yards more or less would send the bullet a long distance in rear or in front of the object aimed at.

Fig. 9.

Fig. 10.



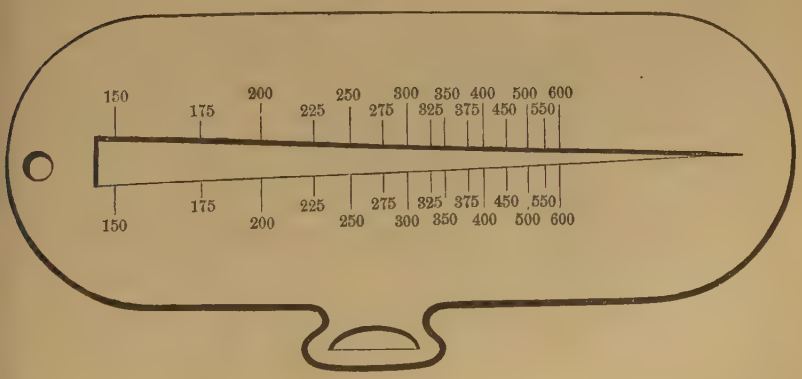

To appreciate distances is one of the most difficult things to be learned, and if the eye alone is to be employed, we must closely observe the effect upon the eye, produced by objects viewed at different distances. For instance, at fifty yards, the features of a man, the buttons on his coat, the ornament on his hat, can be plainly perceived; at one hundred yards, his lineaments are no longer distinguishable, the buttons seem a continuous line, the ornament on the hat no longer shows its shape; while at one hundred and fifty yards, the buttons are invisible, and the face presents only a vague disk under the line of the hat. Thus, for every increase of distance, the indications become less and less distinct, and vary, moreover, with every man, according to the range of his sight.

Next come the optical illusions. In foggy and cloudy weather, objects seem much more distant; and on clear, sunshiny days, they seem much nearer than they are in reality. From the effects of perspective, objects placed at the end of an avenue of trees always appear at an increased distance, and it is in the same way that the absence or contiguity of other objects, the state of the atmosphere, and the effects of light and shade, may seemingly increase or diminish the distance in many cases. For instance, a man on an elevation, with only the sky beyond him, looks much taller and larger, and consequently nearer, than he would under other circumstances; whereas one placed before a high building, tree, or other lofty object, appears much smaller and more distant. Moreover, the seeming height and size are themselves modified by the state of the atmosphere, the degree of light of day, &c., &c.

Various are the instruments devised to relieve the difficulty of estimating distances, but none have yet been produced which give entire satisfaction. They are all constructed on the principle that objects appear smaller as they are more distant. The figure below represents the instrument generally accounted the best.

This stadium, as this kind of instrument is called, consists

Fig. 11.



of a piece of thin metal or ivory, with an opening cut in it in the shape of an isosceles triangle. On it a base is taken representing the apparent height of an infantry soldier at a distance of two hundred yards. The intervals to the right represent his apparent height at greater, and those to the left at shorter distances. On the other side is marked a similar scale for cavalry. When used, this instrument is held vertically, with extended arm, between the eye and the object, the head being kept very steady. It is then moved horizontally, until the head and feet of the man whose distance is to be measured, seem to touch the upper and lower sides of the triangle; the graduation corresponding to the points of contact, gives the distance.

But the insufficiency of this instrument becomes evident when we reflect that the length of the arm varies with every individual, and that the least motion of head or hand backward or forward tends to increase or decrease the distance from the eye to the stadium. This has been partly corrected by attaching a string to it, with a knot at the end, to be held between the teeth. Even thus, however, it is considered unreliable, as the apparent magnitude of objects varies with our power of vision, and the least inclination of the instrument virtually narrows the width of the aperture, thus causing great errors of appreciation, especially at large distances, where a correct estimate is most needed. For short distances, the use of instruments is unnecessary; besides, when the enemy is near, we have other things to do than look at him through a stadium.

In laying down theoretical principles, we have assumed the perfection of everything, rifle, bullet, powder, as well as the most favorable circumstances for firing the shot. Let us now see with what degree of confidence all these conditions may be reasonably expected in practice.

The rifles are not always of the same make, nor is the make always regular and perfect. The chief causes of their

imperfection are, in the first place, a wrong position of the sight; and secondly, a defective construction of the barrel.

To obtain an accurate fire, the line of sight must lie in the same vertical plane with the trajectory and the line of fire, which, as we have seen, is the axis of the barrel indefinitely prolonged. If, therefore, either front or rear sight is not precisely in the same plane with the axis, the line of sight will run in one direction and the trajectory in another; and hence occurs what in popular language is called "carrying to the right or to the left." Often the rifle comes from the factory in this defective condition, but more frequently it results from the careless handling of the soldiers. The delicate construction of the sights, especially of the elevating sight, renders them very liable to injury, and after a little campaigning, they are all apt to be somewhat out of order, except in the hands of very expert marksmen.

The second cause of inaccuracy of fire, a defective construction of the barrel, exists more frequently than is generally supposed. Sometimes there is a swell in part of the bore, sometimes a depression. If the latter is not too near the muzzle, it is not very important, but the former always seriously impairs the accuracy of the fire, because it changes the form of the bullet, and by increasing the friction increases the recoil, either of which is sufficient to affect both range and precision.

Bullets are cast or pressed. The former are apt to be imperfectly moulded, and on account of their elongated, conical shape, both kinds are liable to be injured by transportation. In order to load easily, there must be some difference between the calibre of the ball and of the rifle, for after a prolonged fire, the barrel of the piece becomes foul, and sometimes even leaded by particles of the bullet, which are rubbed off, and stick in the grooves and flaws of the metal, occasionally to such an extent, that the bullet cannot be driven home without very

great effort, and always to the detriment of its shape. This difference of calibre, called windage, causes the ball, when fired, to bound and rebound against the sides of the barrel, and to leave it considerably deformed. Several methods have been devised to prevent this, most of them founded on the principle of expansion of the bullet, which, being cast hollow, swells by the action of the powder on its inside, and is thus forced into the grooves of the rifle. If the friction has been uniform, the ball will reach the muzzle in regular shape; otherwise, whether from a defect of the barrel or the irregularity of the bullet, it will leave the rifle much misshapen, and fly through the air with the wildest deflections.

To obtain an equal range, not only should the bullets be of equal weight and size, but the cartridges also should be filled with equal measures of gunpowder of the same quality. However perfect these may be when made, it is difficult to keep them so. In damp weather the powder is apt to become moist. This diminishes the range and also increases the recoil, because the friction is made greater by fouling, which, as we have seen, often injures the bullet, and still more so the charge. When the piece has become dirty, after a few shots, only a portion of the powder reaches the lower part of the barrel in a good condition; the rest adheres to the sides until it is shoved down by the bullet, and thus it communicates the moisture which it has absorbed to the whole charge. The ramming down of a bullet is also no unimportant matter, for if rammed too hard, the powder is pulverized, and its ignition is retarded; if too loosely, the powder occupies too much room, and the gas loses its tension. In addition to injury from atmospheric influences and careless loading, cartridges are liable to be shaken and broken on the march, and before the enemy, in the excitement of battle, soldiers are apt to spill part of the contents in loading. Now, since every difference in the quantity of the powder

produces a difference in the range of the rifle, the regularity and accuracy of fire in actual engagement must be seriously impaired by the foregoing causes.

Among the external causes of deflection, we notice particularly the wind, the temperature, the humidity and density of the atmosphere, the position of the sun, and the difference of level between the object and the rifle.

When the ball encounters a directly opposing wind, it meets with greater resistance to its forward motion than in a calm atmosphere, and is proportionally lowered. When it flies along through a favoring wind, its velocity is increased, and it is proportionally raised. When the wind strikes it from the side, the ball is swayed in the opposite direction, the more so if the wind is at right angles to its course, and is blowing violently. Indeed, a strong wind acting thus perpendicularly to the direction of the ball, is said to deflect it from its course twelve feet in one thousand yards, three feet in five hundred, and one and a half feet in two hundred yards. To this must be added the effect of the wind on the rifle and on the soldier himself.

The temperature, humidity, and density of the atmosphere have also a marked effect on the ball, and occasion deviations from its course. When the temperature is high, the density of the atmosphere is generally less, and the ball rises; the reverse occurs at low temperatures, on account of the increased density of the air. The humidity of the atmosphere also retards the progress of the ball, whereas in dry weather, it generally moves more freely, and rises.

When speaking of the necessity of correctly appreciating distance, we had occasion to mention optical illusions, arising from atmospheric influences. In like manner the sun deceives the soldier as to the real position of the front sight of his rifle. When it shines on the right, that side of the sight is lighted, and the other is in shade; a bright spot is thus seen on the

right side of the sight, which attracts the attention of the man, and leads him to think the middle of the sight to be more to the right than it really is. When the sun shines on the left side, a contrary effect is produced, and in both cases the aim is likely to be faulty. Again, when the surface of the ground is much heated, owing to refraction, the object aimed at appears to be where it really is not. Smoke, too, interferes with an accurate estimate of situation and distance; and if there is much of it, as in battle there is likely to be, often things cannot be seen at all. When the positions of the object and the party firing are not on the same level, the form of the trajectory changes, and if in such cases the usual rules are scrupulously followed, the object will not be struck, the trajectory being less curved when the line of sight is above the horizon, and more so when below..

Now, as soldiers cannot become good marksmen without understanding all these things and verifying them by experiment, we doubt whether any army yet counts many good riflemen in its ranks. In most countries, schools of musketry have been established, where some officers and men are taught and trained in all things pertaining to this art, which they then disseminate throughout all the regiments. That much progress is made in this way cannot be denied; but considering the many causes of inaccuracy of fire, some of which cannot be controlled by the most expert marksmen, and the difficulty of teaching the principles of accurate firing and proper management of the rifle, we cannot expect that this weapon, in the hands of the masses, will ever be more formidable than the old smooth-bore musket; indeed, among the uninstructed—and their number will always be great in every army—it will be actually less so.

Those who really do damage are the sharpshooters, of whom every army has always had a few, and who, provided

with the new rifle, will henceforth be able to inflict even greater injury than ever. They should always fire under shelter, or be protected by skirmishers, just as artillery is supported by squadrons or battalions. They should move and fire without haste or precipitancy, and avoid all excitement, which is apt to quicken the pulse and accelerate breathing. If the rifleman is too much exposed, he will probably lose that coolness and steadiness, without which accuracy is impossible. Moving in small groups, and, as it were, independently, they may do infinite mischief at all times, and especially at the commencement of an action, as long as the field is yet free from smoke. When the battle becomes general, they take their place among the others, and make the best of their opportunities.

In the hands of well-trained skirmishers, the new rifle may work a great deal of mischief; but they will have enough to do with the opposite line of skirmishers, who will probably be quite as vigilant and active as themselves, and both lines will be too much engaged with each other, to think of picking off individuals at large distances beyond. Besides, a peculiar beating of the heart is then apt to occur, which is not always the effect of cowardice, but which, like short breathing, is very detrimental to accurate firing. Breathing, however, must be suspended from the moment of taking aim until after firing, lest the motion of the chest alter the position of the rifle, and disturb the aim. Such, at least, is the rule; but how shall it be observed now, when all manœuvres are executed in rapid gait, and speed has become one of the essential features of modern tactics?

Company and file fire is necessarily less efficacious than that of skirmishers. According to experiment, they stand to each other as 2 : 3 : 4, with men of equal skill and ability. But, as the skirmishers are generally selected from the best men, the real proportions fall far below these. In the heat of

combat, the soldiers, excited to the utmost, decimated by the enemy's artillery, surrounded by noise, dust, and smoke, will always fire straight before them, however otherwise they may have been instructed. Neither regulations, practice, nor experiment will prevent this. One cannot change human nature by argument. In the midst of death and carnage, actually facing the danger that presses upon him, the soldier takes direct aim at the object which threatens him. Precise shooting is done with the brain, but at that supreme moment of life or death, when passion takes the place of judgment, we can hardly expect the soldier to go through a series of calculations, that require extraordinary calmness and self-possession. He will fight, but fight as he best can. What, in this respect, was true at the time of Frederic or of the Empire, has been found at Magenta and Solferino to be yet true. "As to the formation of square and the firing," writes an Austrian officer to General Renard, "there was an absence of calm and precision. The men did not await the word of command, and, most generally, our fire was irregular, without result, and resembled an abortive file fire." Yet these were soldiers whose discipline is proverbial, and whose target practice is not second to any in Europe.

If, therefore, the new rifle prove a most formidable weapon in the hands of the few, its advantages do not outweigh its disadvantages for the common soldier. If it is difficult for these to learn the rules of firing on stationary objects, how much more difficult will it be to practise them in file and company fire, on an enemy who is advancing. Here the object is constantly changing, and requires for every shot a new appreciation of distance, a new adjustment of the elevating sight, and a new aim. The least mistake, such as haste or excitement may easily cause, will render the fire ineffective. The French, on their return from the Crimea, were so convinced of this,

that they removed the elevating sights from the rifled muskets of their infantry of the line, retaining them only for such corps as are to act as skirmishers.

Especially does the use of elevating sights fail in repelling the charge of cavalry; nay, it may here become even very dangerous. At one thousand yards cavalry comes within range of the rifle. If a charge is intended, it will most probably advance seven hundred yards in a trot, two hundred in a gallop, and charge the last hundred yards, passing over the first space in three minutes, and the second and third in one minute. We cannot suppose that the commander of a square will err so egregriously as to commence firing at extreme distances, for he would obtain no result against a line that advances rapidly. Suppose that he withholds the command to fire until the enemy is at six hundred yards, and what is likely to be the result then? The elevating sight is up at the degree indicated. At this time the horses are advancing four yards per second, and as at a distance of six hundred yards, the dangerous space with the Enfield rifle is thirty-two yards, in eight seconds they traverse it; that is, if the infantry make the least mistake in the distance, or fire eight seconds too soon or too late, not one bullet will take effect, unless by accident. After this first fire, they must not only reload their rifles, but also lower the rear sight, and again calculate their aim at the advancing enemy. At one hundred and fifty yards, this will be at the feet of the horses, and at one hundred yards or less, at some point on the ground in front of the object they wish to strike; and this calculation must be made while the rushing squadrons shake the earth beneath the hoofs of their steeds, and when, in a few seconds, a terrific shock must ensue, threatening destruction to all who oppose it.

All was excellent in theory or at school, perhaps, when they operated against boards and painted soldiers, but it is utterly

impracticable before the enemy. The French generals, who have tested the merits of the new rifle, are well aware of its defects. On the outbreak of the war in Italy, they were careful to caution their troops against wasting their fire on cavalry at large distances. One of the most eminent among them, General Trochu, in a conference with the officers of his division, said, "If charged by cavalry, wait till the enemy is within forty yards, fire, and cross bayonets." Frederic and Napoleon were of the same opinion, and every one, whether he has seen war or not, will perceive its practical value.

The rules which we have explained for firing the rifled musket apply equally well to rifled cannon, only the scale of operations is larger; the chances of success also are greater, as far as ball, cartridge, and pieces are concerned, for these are usually better made, and less liable to get out of order. Distance alone is the difficulty; and, as distance increases, so does the difficulty. Nothing can be more astonishing than the precision with which these new pieces throw their projectiles at an object whose distance has been previously ascertained. The cartridges being of equal weight, and the balls of the same shape, all that remains is to give the piece the exact degree of inclination, as marked on tables prepared beforehand from experiment, in order to make nine shots out of ten take effect, provided the piece be good, and wind and weather favorable. New improvements are daily made. Cartridges are now prepared in which the grains of powder are pressed into a solid mass, which, by a coating of shellac or grease, is afterward rendered waterproof. The Armstrong and Whitworth guns, with a range from five to six miles, are the perfection of workmanship both for piece and projectiles; and so with many others too numerous to be named.

But, for measuring distances, there is nothing yet which meets the requirements of the case; still the exact knowledge of distance is a fundamental element of good firing, since

on it depends the angle of inclination to be given to the piece. This is a lamentable deficiency, for the most skilful are apt to make mistakes which, in ranges of two or three thousand yards, amount to several hundred. "What distance?" is the inquiry heard all around when coming into battery; and as no two answers agree, the firing is begun somewhat at hazard. After a while, it is true, error is rectified by observing the fall of the projectiles; but the same uncertainty recurs every time position is changed, and thus numberless shots are lost. Besides, it is not easy to note at a great distance the spot where shot falls and shells burst. The smoke, which troubles artillery even more than riflemen, soon hides everything from view, and is often so dense as to favor an attack of cavalry on the pieces.

Call to mind, again, that with the distance increases also the difficulty of appreciation. Hard as this is at two thousand yards, it becomes utterly impracticable beyond that range. What is the use, then, of having guns, say with a range of four or five thousand yards? It is a mere name, and one full of dangerous illusion. They estimate—no one knows how—that the enemy is at a certain distance; they make their arrangements accordingly, and fire. What happens? They have committed an error of appreciation of one fourth, one third, perhaps one half. If the enemy is at three thousand yards only, the balls fly high over his head, and give him no concern. Or he is five thousand yards off, and with equal indifference he sees them fall at one thousand yards in front of him. At such great distances, perhaps one ball in a hundred makes victims, and even then how few! The piece must be pointed at a great angle of inclination; the projectile, falling under a greater angle than the angle of sight, comes down like an aerolite and buries itself in the ground, but never with any ricochet rebounds, like those of a stone on the water. If a ball, it crushes a man to atoms, provided he be exactly underneath it; if a shell, it kills or wounds

a few more; and even this meagre result, be it well observed, occurs only in consequence of an extraordinarily correct appreciation of distance, or what is more likely, of some happy guess.

The French soldiers who were in the Crimean campaign remember well the two Russian batteries on the right bank of the Tchernaya, which they playfully called Bilboquet and Gringolet, to express their contempt for the balls which they hoisted into their camp. During the whole siege of Sebastopol, these batteries threw a vast number of projectiles on the plateau of Traktir, three or four thousand yards off. Fired from a considerable height and under great elevation, they came down majestically, as from the clouds, on the French grounds, and there buried themselves in the most harmless manner. The soldiers watched them descending, stepped aside, and then dug them up to construct them into trophies. After several months' firing, not a man was hurt.

Indeed, firing at large distances hardly ever compensates for the expenditure of ammunition. With field guns, a range of fifteen hundred or two thousand yards yields still the best results; beyond this their fire is worse than useless, inasmuch as it inflicts only slight injury upon the enemy, and thus strengthens his confidence, by creating contempt for his adversary. If, therefore, a long range be necessary to dislodge a foe from some important point, or to disturb his reserves, or for any other purpose, it should never be attempted without great chances of success, lest it result in something worse than a sheer waste of time and ammunition.

In thus investigating the new rifled firearms, to ascertain what they can do and what not, and in what degree they increase the danger of those exposed to them, we do not design to underrate their value as powerful engines of war. On the contrary, we sincerely desire to understand their real worth, as it is our interest to do, that we may profit by it, and study

the proper modes of defence. But while acknowledging the power of these engines of destruction, we should be careful not to exaggerate their importance, and come to extreme conclusions in regard to their efficiency on the field of battle. History abounds in inventions of the kind, slings, bows, crossbows, arquebuses, culverines, petronels, serpentines, muskets with matchlocks, wheellocks, flintlocks, percussion locks, pistols of all descriptions, from the blunderbuss to the Colt's revolver, &c., &c., some of which, at their first appearance, created a much greater sensation than any of the new rifles do now; yet tactics have always been equal to the circumstances. It is, indeed, to the increase of danger that tactics owe much of their improvement. Every advance in the art of war has, moreover, been invariably attended with a corresponding decrease of mortality, and every new engine of destruction seems to have been a means of obtaining victory at less expense of life.

In calculating the danger arising from the use of the new firearms, we are, perhaps, too prone to view the matter on one side only. Let us remember, however, that if the enemy have rifled cannon, so have we, and if both do their duty, the chances are equal. If one party alone were provided with them, the advantage would indeed be incalculable; but since their introduction has become general, armies will meet on equal terms, and the danger is more apparent than real.

Formerly, armies marched toward each other in columns of varying depth, and they deployed within cannon shot to commence the action. At Waterloo, for instance, Napoleon's columns deployed at nine hundred yards from the English position, and his reserves and the old guard at two thousand yards from the formidable batteries which covered the plateau of La Haye Sainte. With the present firearms, these short distances are wholly inadmissible, for deep columns and large

masses, like those which formed his reserves would be mowed down by hollow shot before they could be brought into action. We must now deploy at double those distances, and advance in line to within musket range. The reserves must be sheltered by natural obstacles, or move in small columns that can be easily united; to place them beyond the range of the new cannon, would virtually exclude them from the conflict, for the fight would be over before they could come up to assist. It must thus not be supposed that henceforth battles will be fought at extreme distances. The engagement will begin sooner and at a wider interval; but the very necessity of economizing ammunition, as well as the impatience to obtain visible and decisive results, will quickly compel a short-range conflict, and the real shock of armies will take place with sword and bayonet, perhaps even more so than in any battles of the past.

# CHAPTER IV.

## THE CHARGE.

A CHARGE is a rapid and impetuous onset of a body of cavalry upon the forces of the enemy. To be successful, it is necessary that the horses be at their utmost speed at the moment of collision, and if they arrive well aligned and in a compact body, the shock must needs overthrow anything that happens to stand in their way. To break this speed and this cohesion must, therefore, be the main object of the defence, which, if unaided by natural obstacles, consists—for cavalry, in meeting the charge at an equal or more rapid pace; and for infantry, in shooting down the horses before they reach the bayonets.

The art of attack is the most difficult as well as the most important part of cavalry tactics. The movements which precede and prepare it, may all be perfectly explained; but, the charge once begun, what follows transcends all calculations of theory. When witnessing a cavalry charge on the manœuvre field, we wonder how anything can resist its shock. Again, on seeing the solid formation of infantry squares, bristling with bayonets and protected from afar by their destructive fire, we deem it almost impossible for cavalry to come near—much more so, to make an impression. Persons whose experience is limited to such displays are apt to indulge in speculations,

which, however correct in the abstract, are nevertheless idle, from the impossibility of their embracing all the circumstances that constitute the opportunity for a charge, and which in war are so varied, that no two charges bear even the least resemblance, while what really occurs would often baffle the efforts of the most vivid imagination. Thus it is very true that a good intact infantry, not scattered by artillery, provided with excellent firearms, and thoroughly instructed in their use, can make a stand against the best cavalry; that young foot soldiers, exhausted by hard fighting and long exposure to fire, will fall an easy prey to any cavalry that ventures to assail them; that light cavalry, other things being equal, must yield to the greater weight of heavy; and that all must give way before a well-directed fire of artillery. Yet all this may be vastly changed, even reversed, by actual circumstances. The best infantry may have suffered so severely as to be incapable of further resistance, while instances are not wanting of new levies, skilfully officered, and in good position, repelling the attacks of the most formidable cavalry. The records of all battles tell of artillery taken, and more than once has light cavalry worsted heavy when weakly led or overworked.

We have already had occasion to remark how art can compensate for numbers, and this applies especially to cavalry, who find in the rapidity of their movements an additional element of strength. But this faculty must be discreetly used, for the success of the charge would be seriously endangered if the energies of the horses were wasted before the decisive moment. A body of cavalry moving toward the enemy should therefore advance as calmly and composedly as under ordinary circumstances; it will then be able, at the very last moment, to throw all its energies into the charge, and strike unitedly and impetuously. On the contrary, if it move too swiftly at the beginning, the horses become excited and uneasy; they reach the enemy

exhausted and panting, and, even though at first successful, they are powerless for prolonged action. A small detachment kept in reserve will then suffice to throw them into utter confusion. This was the cause of the disaster which befell Murat's cavalry at Leipsic, and the Union brigade, under General Ponsonby, at Waterloo.

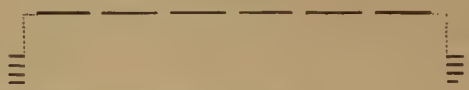
It should always be remembered that the paramount purpose of cavalry is to attack; for even in defensive positions, the real attack of the enemy can be averted only by an anticipatory one. Hence it is a rule always to husband the strength of the horses, and never to spend more of it than is necessary for the object aimed at. Be careful, however, not to push this precept to an extreme, and treat the horses so tenderly that the least overexertion will injure them. Keep them hard at work, develop their stamina by healthful activity, and so economize their energies that when the crisis comes, you may have a cavalry strong as well as numerous. Then use them unsparingly; heed not the losses, but look solely to results.

A charging line generally begins its movement at a trot, which continues according to circumstances. At two hundred yards from the enemy the gallop is sounded, and at fifty, the charge. Then all dash forward simultaneously, the horses vie in speed, the men shout enthusiastically to inflame them to the uttermost and become themselves deaf to the whistling balls. An awful crash ensues, followed by cries of agony and death, and for a moment the scene is wrapped in clouds of mingled smoke and dust, where nothing is discernible but confused forms of men and horses, and flashes of swift steel.

The mode of defence for cavalry and infantry being entirely different, the attack upon them must assume a different form accordingly. When directed against the former, it must be borne in mind that in all engagements of cavalry, the advantage generally belongs to him who last brings his reserves into

action, and that the weak points of a cavalry corps, whether in line or column, are its flanks. For this reason, a line intended to charge should always be supported by one or more squadrons drawn up in columns of platoons, and placed in the rear of both wings, as in Figure 12. These columns, whilst multiplying the chances of outflanking the enemy by a gradual deployment right or left, are also the surest means of protecting ourselves against any similar attempt on his part, and if the extension of our line would justify the employment of two squadrons for this purpose, the first, by wheeling outward into line, would resist all attacks against the corresponding wing of the deployed line; and the second, wheeling inward at full speed, would be ready to charge in flank the enemy that, having worsted that deployed line, should imprudently venture to pursue it.

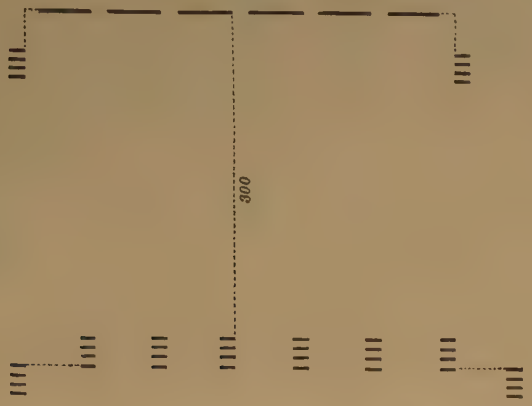
Fig. 12.



This precaution, however, is hardly sufficient against an enemy numerically strong. Our own squadrons, if victorious, may have suffered so much as to be unable to follow up their advantage; or if defeated, the enemy's reserves may keep our flanking squadrons so busy that it is impossible for them to succor those who are driven back. It is important, then, to have a reserve, forming a second line, three or four hundred yards in rear of the first, drawn up in as many columns of platoons as it has squadrons. All these should be ready to deploy into line by a rapid forward movement, leaving large intervals, through which the squadrons of the first line can pass in case of discomfiture. Without this precaution, the disorder of the first line would be certainly communicated to the second, and the defeat of the former probably involve the

ruin of both. Figure 13 represents the order of battle for a brigade of sixteen squadrons, drawn up in two lines, as prescribed in Cooke's U. S. Cavalry Tactics, § 619.

Fig. 13.




Ever to be prepared for a repulse is the great safeguard in all encounters of cavalry with cavalry. However brave and determined a body of horsemen may be, there is a limit to their energies, and sooner or later we must expect the first line to falter. For even supposing their efforts to be successful in the first instance, it is always probable that the enemy will bring up his reserves, and then the scattered squadrons of the first line will be forced to yield, and to rally behind the second. Good cavalry on such occasions spread out on their retreat, and make room for the reserve squadrons to come up; but young cavalry, if overpowered, are apt to crowd together, and the second line is thus in danger of being carried off with the dense mass of fugitives. Whenever this is to be feared, the intervals may be made of double width, by uniting two columns into one, as in the following diagram. Such double columns offer the advantage of solidity combined with great mobility, presenting, as they do, a respectable front, which can be increased fourfold by successive deployment right and left, and

threatening by an outward movement of each separate squadron, the flanks of an enemy who should be too ardent in pursuit.

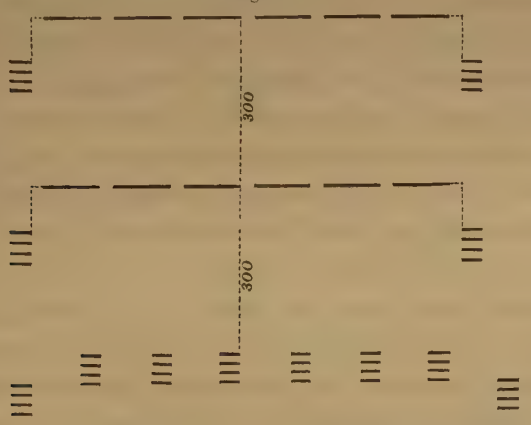
Fig. 14.

A cavalry officer must know how to mask his intentions, and be able under all circumstances quickly to present as large a front as is compatible with the safety of his flanks. He must know beforehand that he seldom comes upon the enemy exactly in the position in which he expected to find him; for the latter does not willingly afford an opportunity of carrying out a preconcerted plan of attack, while the least move on his part necessitates a countermove, which must always be made without hesitation. It is important, therefore, to calculate with the utmost precision the exact time required to carry out a movement, and never to attempt one unless confident that there is time to complete it; for cavalry caught in the act of forming must be overthrown if its adversary knows how to profit by the opportunity.

To draw the enemy into some movement which forces him to expose his flank, should always be the great aim of a cavalry commander. "A manœuvre," says De Brack, "which I have

seen invariably attended with success, when two lines are watching each other without stirring, both waiting for a favorable moment to attack, is to make a squadron break forth in column from behind one of our flanks, and press forward, as if to turn the enemy's flank. They will immediately wheel into column to prevent this; then at once sound the gallop and bear down upon them; you have every chance of success. This manœuvre is the whole art of war in miniature." A similar stratagem has been suggested on a large scale for three lines of cavalry, the first consisting of light horse deployed in line, the second of reserve cavalry equally deployed, and the third of cavalry of the line, formed in small open columns, as in the following diagram:

Fig. 15.




If the enemy is vigorous, he confidently expects to throw back the light horse upon the second line, whose deployment he is apt to consider a mistake, and he advances resolutely to the charge. As soon, however, as he has come within proper distance, our first line suddenly wheels out at full speed from the centre, as if to make a most formidable flank attack, and just in time to clear the front of the second line, which, meanwhile, has taken the gallop. Not being prepared for this, the enemy

is not likely to make the same manœuvre; he will rather press his charge in order to take our first line in the flank; thus he will meet our second at a disadvantage in point of weight and velocity; or he will make a general flank movement, and be caught in the act by the latter. At any rate, there will be some moment of hesitation and confusion, the least of which will prove fatal to him.

The difficulty of advancing with a long line, and the danger of being driven back on all points at once, often make it expedient to use echelons instead of attempting to charge on a large front in line. Moreover, an attack in echelons possesses the advantage of not engaging all our forces at once, and of enabling us to employ the part not engaged for the support of any threatened point. It is especially when troops must deploy from column into line, as when debouching from a defile, that the order in echelons offers peculiar advantages, for it does not require the troops to wait until all shall have come into line in order to commence the charge; it is sufficient if only the first echelon is formed, the other meanwhile coming up in succession. So long as the deployment is not completed, the enemy will remain uncertain as to the real point of attack, and this uncertainty is all in our favor. For suppose, with our first two or three echelons we threaten his left; he will naturally reënforce it. We can then, with the rest, attack his weakened right, which is likely to yield before superior forces, for the rapidity of our movements will not allow any successful counter manœuvring. If the leading echelon is victorious, it takes the enemy in the flank; while the others attack him in front; if defeated, the succeeding echelons will charge him in flank, should he venture to pursue the vanquished.

All the necessary dispositions to charge ought to be made beyond reach of the enemy, and under cover of a line of skirmishers. The officers commanding these must keep a watchful

eye upon the flanks, so as not to overlook any movement toward them favored by the ground or covered by woods or enclosures. The skirmishers are generally accompanied by some officers or non-commissioned officers, sent out to reconnoitre the ground over which the attack is likely to be made, and to notice every local feature which may be turned to account, or may prevent their own troops from attempting to charge amid obstacles that might involve them in destruction; such as marshes, quicksands, stumps of small trees, even ditches and hollow ways. The former put a stop to all encounter, the latter may prove very dangerous if not parallel to the front. If the enemy is ambitious to clear them, by all means let him do so, and fall on him before he has recovered his order or resumed his speed.

If, when advancing toward an enemy, he turns to retreat, the attack is made in open order with part of the troops, the remainder following in regular order at the trot. Such open attack, called "charge as foragers," is more effective on an enemy retreating in disorder than one made in a compact mass, as the horses have more freedom than when moving in the ranks. Each man, moreover, acting for himself, makes for the nearest foe, and is more likely to catch the enemy and inflict loss upon him than if all pursued in a body.

Cavalry seldom meet each other in a charge executed from both sides at full speed; the squadrons in which there is the least courage and discipline, hesitate, waver, and generally turn before joining issue. Sometimes, also, two brave corps of cavalry approach each other slowly and seemingly in default of spirit, though their lines are yet unbroken, and no obstacle intervenes. With them it is not lack of courage, but an instinctive appreciation of each other's valor, which for a moment possesses and restrains them. But let aught occur to break the spell and rouse their passions, and the collision will

be the more terrific, as it has been the longer delayed. The solution of this must be sought in the human heart. There are few men whose nature moves them, by a stoic sense of duty, coolly to slay a fellow being whom they never saw before; it is only fierce war that begets the habit of shedding human blood without repugnance. And even there, the ruthlessness of slaughter is a kind of fury, which finds its mad inspirations in the dictates of self-preservation, in the agonies of wounded and dying comrades, in the sufferings of our country, in the desolation of our homes. No wonder, then, if especially the young and uninitiated cavalry soldier, whose heart is not yet inflamed, should evince some hesitation in closing with the enemy. Infantry, or artillery in position, may passively stand fire; but to strike down his adversary, the horseman must close, and the chances are that he receives a blow in return for the one he deals. Besides, he must feel that, in approaching at full speed, if they come into collision, both must go down, and probably break every limb in the shock.

We all naturally recoil from deadly strife. How seldom have infantry crossed bayonets! Some say never. One party generally turns before another who shows more skill, discipline, and courage. So cavalry soldiers, unless they are well trained, confiding in their leaders, trusting in their horses, and assured that their weapons are formidable, will not readily plunge into the enemy's ranks. In the return of the English from Burgos in 1812, a small company of French cavalry met an English one between Villadrigo and Villaropegue. Both having drawn up in two lines, advanced to the charge, when suddenly the first lines pulled up, closely confronting each other, and stood fast. It seemed that no one dared to deal the first blow, till at length one of the French made a cut at the man opposite to him, when instantly all plunged forward and engaged. The colonel and most of the French officers were wounded, but the

English lost three hundred men, and were driven back in great disorder.

A cavalry engagement is seldom decided by a single charge, but, as we have said, the advantage remains with those who have the last reserve of fresh troops at their disposal; this generally determines the fortune of the day. Observe, however, that if you have succeeded in overthrowing the enemy's lines, your own will be in disorder, but the mêlée which ensues soon becomes a pursuit, and thus affords an opportunity of destroying those who have turned; for the charge and the mêlée do not last long enough either to inflict or to sustain a very heavy loss. It is now difficult to recall the men; they are maddened by the excitement of the fight, and intent only on cutting down the unfortunate fugitives before them. This is not the time to stay the slaughter; rather continue the pursuit with ardor, and watch over the safety of the pursuers with your reserves, till the fleeing foe is utterly routed.

Should you try to re-form your line and follow with your flank troops or reserves, you would only lose time and give your enemy an opportunity of riding through the intervals of his second line and rallying behind it. This must by all means be prevented. If the enemy's second line is yet firm, drive the first upon it, allowing them not a moment to choose the road. Dash into the second line pell-mell with the fugitives, and thus derange it. It will probably be carried off with the rush; if not, detachments from your reserves must finish the business. Be careful, however, not to be caught by his flank columns and by their charges inwardly. If they show any fight, rally from the pursuit as quickly as possible, and, together with your second line, or reserves, renew the attack. Time is then of priceless value, and each squadron, or even less, as soon as rallied, should at once be launched against the foe. Attack in succession, in echelon, in any way; the prime object being to

throw the second line into disorder before the first can rally again.

A little work, called "Maximes, conseils, et instructions sur l'art de la guerre," remarkable for its sound and practical information, thus gives in a few lines the résumé of what is said above : "In a charge of cavalry against cavalry, five cases may present themselves. First, the enemy runs before he is reached. Here, as he is some distance in advance of you, it would be useless to pursue. Stop short, rectify the alignment by placing yourself a few paces in front, and be ready to gallop up and charge the second line, when it issues through the first that flees. If you see great disorder, and no one comes to oppose you, send out your first or last division as foragers, and follow trotting. Secondly, the enemy halts and hesitates. Increase your speed and fall upon him, at the risk of blowing your horses; but as soon as he is broken, stop short, rally quickly, and if your horses are too much out of breath to begin a new charge, let the columns that support your wings form themselves in your front to pursue the line defeated or to repulse a fresh one. Thirdly, the enemy passes through your formation, and you through his. You are then in great disorder, and most probably out of condition to sustain the shock of the second line. Stop short, rally quickly, face about to the rear to charge the rear of the enemy that has passed; keep behind and give full scope to your flank columns and reserves. Let the former take the dispositions required by circumstances, either inwardly or outwardly, becoming first line with the reserves which now furnish the flank columns, while the troops that have charged now form the reserve in their turn. Fourthly, you and the enemy both stop. Immediately start off at a full gallop; the success is yours, if you are the first to take the offensive. The enemy will inevitably give way, and then you will proceed as in the first case. Fifthly, your men

run away. Let them run a little, for it would be useless to attempt to stop them in the first moment of fright, and you would only waste your breath and energies. You were in front of your troops before they turned, and, of course, now you find yourself behind. Follow them closely, calling near you your subalterns and best men, in order to draw them away from the mass that flees, and to form, while going on, a first nucleus. Then, as soon as you meet with any suitable accident of ground, or anything favorable for rallying, increase your speed, push on before your men, face them, and give the command to halt, employing both voice and gesture to be obeyed."

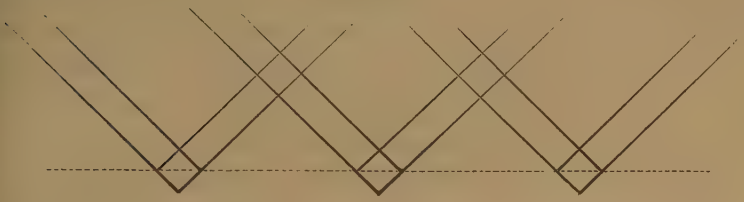
The main object of great engagements between cavalry is to drive that of the enemy from the field of battle, and to return more free to act against his infantry. Some military writers affirm that cavalry, when well mounted, well armed, and well led, can under any circumstances attack and discomfit infantry. This may have been true when precision in the manual exercise and rigidity of motion were deemed the essential qualities of a foot soldier. But now, since all this has been changed, since all the physical powers of the soldier, as well as his skill, are developed by gymnastics, target and bayonet exercises, it would be dangerous to trust implicitly to such a doctrine. Seydlitz and Zeithen are always adduced as examples of what can be done by skilful leaders; but it must in nowise be understood as meant to detract from their fame, if we remark that neither of them ever had to contend with half the difficulties cavalry generals now encounter on the battle field. No doubt they would yet be equal to their high renown; but their notable achievements can hardly be any longer presented as models for our imitation in every respect, tactics having entirely changed since their day, for infantry and artillery as well as for cavalry. Under Frederic the Great, infantry was drawn up in two long lines, moving bodily or by fractions of line, and always at full

distance and with processional regularity. Artillery tactics were still in their infancy, and those formidable batteries with which Napoleon prepared his grand successes were not yet known. The guns were distributed in equal numbers all along the front, in the intervals of the battalions, which, thus connected, formed a continuous line. Skirmishers, columns of attack, and those combined squares against which the most resolute squadrons are powerless unless aided by artillery, were equally unknown. Cavalry and infantry acted independently, as it were, each on its own account. The former was invariably drawn up in two bodies at the extreme wings of the latter, and commenced the engagements by rushing upon the opposite squadrons. It had to fear neither riflemen nor mounted artillery, nor horse artillery, now so redoubtable, and which appeared for the first time, only at the end of the seven years' war, at the battle of Reichenbach. Then cavalry actions mainly decided the day, and the best instructed and the most skilfully led had necessarily the advantage. When the enemy's squadrons were driven from the field, his infantry, which, meanwhile, had been shaken by musketry and artillery fire, was attacked in both flank and rear, and, being unprotected by reserves, nothing remained but to retreat or surrender. Consequently, cavalry then played a part in battle which now is no longer assigned to it.

At present, cavalry is brought into action during the second stage of the battle, when the engagement has become general, and often only toward the latter part, to strike a decisive blow and follow up the advantage. At the commencement it must be content to play only a secondary part, in consequence of the perfection of firearms and the great ease with which troops now change their position. Infantry, no longer tethered to a battle field chosen because it is level, nor to a position covering their encampment, and being lightly

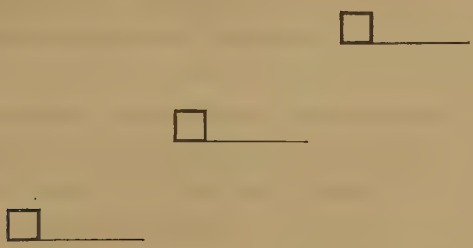
armed and equipped, move off during an engagement when threatened by a powerful cavalry, and neutralize its efforts by occupying enclosures, or withdrawing into a hilly or otherwise difficult country. Instead of forming long lines and open columns, they now act in compact masses, or throw themselves into squares, which, supporting each other by cross fires, and protected by artillery, often defy the efforts of the most resolute cavalry.

Fig. 16.



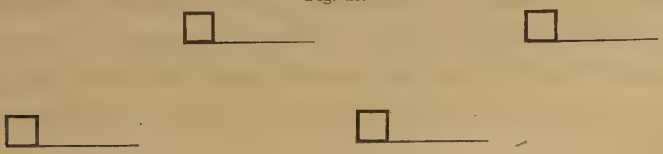
Or, moving in echelons, they can in a moment form squares, equally protecting each other, and leaving openings for their cavalry to pass through.

Fig. 17.



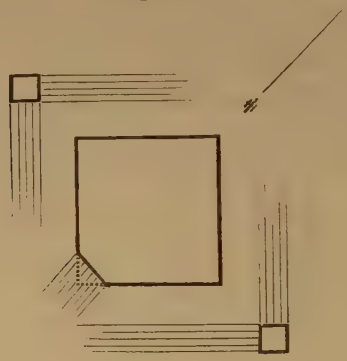
Or, when retreating checkerwise, they can at any time make a stand against cavalry, and, although less strong when thus arrayed, present a respectable defence.

Fig. 18.



Even a single square may offer a strong resistance; and though its angles are obviously its weakest points, these may be much strengthened by oblique fires; also by cutting off one of the corners, or by placing cannon there, or by both; finally, by surrounding the whole with a chain of skirmishers, who, at the last moment, rally in two small groups at the opposite angles of the square, whence they protect it by a flank and cross fire.

Fig. 19.



However, all these formations, strong as they are, may be overthrown by cavalry, if the charge is made at the proper moment. If a man should run his head against a solid wall, surely he would break it; whereas, if the wall were tottering, a little child could easily overthrow it. Just so it is in battle. It is well for cavalry to let a good intact infantry alone for a while: after having been handled by infantry and artillery, they will, in due time, become more meek and manageable, and then much greater results can be obtained at much less expense. "The most difficult point in the attack-instruction of cavalry," says Von Bismark, "is to determine where infantry may be charged in the safest and most advantageous manner. According to Theobald, the attack cannot be safely made until the infantry evince disorder or show openings, and this seems

right. It is true that, according to the laws of mechanics, a line of cavalry in motion ought to ride down a line of infantry, if it might be supposed, without psychological reference, that troops could be considered as mere machines. When it is necessary to obtain a great result, there can be no doubt that brave cavalry, under the command of a chief who is intrepid, and impressed with the necessity of conquering, will overthrow any infantry; but success thus gained is attended with considerable loss. From the superior tactics of the infantry, and its advanced state of organization, it is very difficult for cavalry to attack it with advantage. These superior tactics consist in the quick formation of masses, and in a well-supported and destructive fire.

Hence result two great axioms for all cavalry attacks upon infantry. First, to suffer the effect of cannon shot to precede the charge. Secondly, never to attack infantry when it has taken up that favorable position which resolutely expresses, 'Only come on.' This presupposes that the infantry has not been previously damaged by untoward circumstances, such as continued rain, which damps the cartridges, and then the muskets miss fire; and that want and misfortune have not weakened the moral element. When this has been enfeebled, the cavalry have only to ride boldly forward to obtain success; but, where it remains vigorous, a charge of cavalry in line will seldom succeed. For, if the hostile infantry be resolute, and exhibit no weak point, it is not so much prudence as duty to consider, before proceeding to the attack, whether the gain will be proportioned to the loss. In such cases the same object is often attained by manœuvring to surround the enemy, which movement certainly does not afford the amusement of a massacre. There are officers who attach great value to such a massacre, and expect it from the cavalry under all circumstances. Doubtless it is a truly grand sight when a line of

cavalry, undaunted in the charge, rushes like a tempest over the field, bursts upon the infantry, and as a whirlwind destroys it. Many examples of this kind are found in history; but those are still more numerous where cavalry attacks upon infantry, made at the wrong moment, have failed. For this reason it is always necessary to note whether appearances are favorable, and this is precisely what cannot be acquired by rule; it springs from innate talent, and makes the art of attack the most difficult problem in tactics."

In a former chapter we had occasion to observe that in the general dispositions for battle, only a few squadrons of light horse join the heads of columns to avail themselves of opportunities, while the mass of cavalry is held back in reserve. This, at the commencement, should not be brought into action or in any way exposed to cannon fire. This rule rarely admits of exception. The time when cavalry produces great effects is, when the line of battle wavers, when the artillery fire has weakened it, when single points have become thinned, when the infantry is weary and exhausted, and their fire begins to grow uncertain. Then is the moment for advantageous action. The cavalry must then impetuously advance and attack in masses. The ears of the foot soldier are so affected by the thunders of the cannon, and the long-continued fire of small arms, that the word of command is scarcely heard or understood. The smoke favors an unperceived advance of the cavalry, and at such a time, their mere appearance, when unexpected, frequently affrights the infantry, and makes the victory easy. At the battle of Waterloo, an entire division of French infantry was dispersed under such circumstances, by two regiments of English dragoons, almost without firing a shot, and leaving behind them thirty guns. Indeed, in all the great cavalry actions of the century, the results obtained have been determined more by consternation than by the steel.

It is true that firearms have changed since then, but the human heart remains the same. A man may himself feel brave enough, but is he sure of his neighbor in the ranks, when, panting with exhaustion and excitement, he himself obeys only a superior sense of honor and of duty, knowing that if but a few should fail, it would involve the loss of all? It requires years of discipline and an unbounded confidence in the chief, to keep a square together when artillery is furrowing its dense mass and cavalry is coming on. If at such moments the latter could observe the impression which its imposing approach produces on the enemy, and knew how to take advantage of it at the right time, the instances where battles were determined by this arm would be greatly multiplied.

It is not then that the fire of infantry is much to be feared, whether armed with rifles or with old smooth-bore muskets; whereas the improvements of artillery all favor cavalry. Horse artillery now moves with almost equal speed, and acts in concert with the latter, while formerly these labored alone. With such powerful auxiliaries, cavalry are unquestionably more formidable than before; and with horse artillery, they must always destroy infantry, however good and tried it may be; for even though the cavalry alone may effect nothing against them, the artillery will shatter them, while they keep together, and when they attempt to deploy, they must fall a prey to the horsemen. Thus, if the improved tactics of infantry have given them an advantage over the cavalry, the latter are even greater gainers by the improvement of the artillery, which, by accompanying them, affords them those favorable occasions when to dare is to conquer.

Infantry, shaken by artillery, is soon ripe for the harvest of the sword. When that moment approaches, they exhibit characteristic symptoms in which a practised cavalry eye is never mistaken. Officers screaming instead of commanding,

soldiers talking aloud as if striving to supply the shortcomings of their leaders, a nervous commotion in the ranks, peculiar to young and demoralized infantry, these are so many signs to show that they are distressed, and that their time has come. Then advance your cavalry without hesitation. Put the horses to their full speed, ride home, and the square must go down. Some saddles may be emptied, some horses killed or wounded, but the enemy nevertheless is doomed, for not a horse, unless shot through the brain or with his legs broken, will fall; though stricken to the death, he will struggle through the charge.

This tenacity of life in horses is much greater than is generally known, and they must be very severely wounded to drop down dead upon the spot. "At the battle of Strigau," says General Warnery, "one without his rider, which had one of his hind feet carried away by a cannon ball, joined the left squadron, where he remained with the others during the whole battle, although we were several times dispersed. At the sound of the call he always fell into the same place, which was, without doubt, the same that he had before belonged to in the squadron. Another time a cuirassier's horse fell in the grand attack at the exercise of Breslau; the cuirassier got him up and mounted him; at three hundred paces he fell dead. The late General Krokow, colonel of the regiment, had him opened, and it was found that the sword of the cuirassier had penetrated his heart the tenth of an inch. These facts prove that a horse is not easily to be brought down, unless a ball should break his skull."

It is impossible for a man physically to withstand the shock of a horse when at full speed; what, then, must infantry do when their bayonet is their last resource against a cavalry whose attack they have been unable to arrest. "Against cavalry," says Berenhorst, "it is the rule for infantry to fire

steadily by word of command, and not to begin too soon. It is assumed that the cavalry will turn. All regulations are silent as to what should be done, when they do not turn after the last shot has been fired, and the horses are on the bayonet. To demonstrate the matter more clearly, we will examine, measure out, and calculate the chances of a charge of cavalry against infantry, conducted according to rule. Let one sixth of the horses be shot down, the advance of the remainder is not thereby arrested. Imagine the infantry in the above situation, for which no instructions are given, namely, the volley has been delivered and the muskets are brought to the charge. The second and third rank may have their muskets at the charge or be busy loading, but the front rank have their muskets thrown forward, the right hand grasping the small of the stock. In this position, the musket and bayonet reach only three feet beyond the man's elbow. Is the infantry soldier now to aim at the rider or his horse? He cannot reach the man; it is four feet from the horse's nose to the man's belly, and three and a half from the horse's forehead to the man's breast. The man is further protected by the head and neck of his horse, and if the infantry soldier try to thrust at him, he comes in contact with the horse and is thrown down.

But let us admit an impossibility. Every bayonet has been buried in the stomach or breast of the riders, still the horses alone will break the ranks of the infantry. The foot soldier can at best only point his bayonet at the horse's breast, and let him spit himself, like a wild boar. Here, too, he must hit the heart to kill him, for any slighter wound will be unavailing at this moment; and even piercing the heart cannot save the soldier, for the horse, with his great weight and the prodigious impulse of his speed, will crush the whole rank in his fall.

Infantry must, therefore, depend wholly on its fire; it has time to deliver only two volleys, and these with barely the

power of crippling every sixth horse. Experience shows that the effect of musketry is very trifling at more than three hundred yards, and within this distance it is not prudent to try more than two discharges. The calculation is, that the fusileer can fire his piece five times per minute; thus for every shot twelve seconds are required. The cavalry soldier traverses six hundred paces in thirty seconds; to each hundred paces five seconds. If the fusileer deliver his first fire at three hundred paces, and twelve seconds later his second, only three seconds remain; he cannot load again, and will be ridden down in the interim. A battalion, which delivers its fire at sixty paces and hastens to reload, is ripe for mowing down. As sixty yards are quite far enough for missing, particularly when the rushing in of cavalry shakes the earth and men's nerves at the same time, it would be far better to order one volley only at thirty paces, and bring the bayonet to the charge without attempting to reload."

We must here observe that the author of the above wrote some fifty years ago, and we know that infantry now fires with much greater accuracy, though not five times per minute; again, that a line of cavalry cannot well pass over six hundred yards in thirty seconds; further, that he presupposes an attack of fresh cavalry upon intact infantry. But even after making all necessary corrections and allowances, the speculation remains very interesting; the more so, as the conclusions of the author correspond entirely with those now arrived at; that is, for infantry against cavalry not to waste ammunition at large distances, but, if charged, "to wait until the enemy be within forty yards; then to fire and cross bayonets."

There are four modes of cavalry attack on infantry: the charge in straight line, the charge in an oblique line, the charge in echelon, and the charge in column. As infantry seldom awaits the attack of cavalry in extended lines, but generally

forms in column or square, an opportunity will rarely occur for an attack in a straight line. But should it ever happen, be careful not to adopt the formation of what tacticians call "en muraille," the invention of a French infantry general, Puysegur, and which consists of a line in which the squadrons have no or very slight intervals between each other. Intervals, however, are rightly deemed indispensable, for, as the horse exerts himself and increases his pace, he requires more room than when halted or at a walk. During the trot, therefore, and still more at the gallop, these intervals close of themselves, so that there are no openings which the enemy may take advantage of, and even if there were, infantry would scarcely dare to venture within them. When the ground is perfectly level, and without any natural obstacles, an advance of squadrons with small intervals may be made, though with difficulty. But if the country is rough and broken, as most countries are, it is impossible to advance quickly and preserve order. When pressure takes place, it rolls on and on, swelling like a wave, till it runs itself out at the first intervals; but if these intervals are closed, the waves meet, break the line, impede its advance, and throw it into confusion. The vicious horses contribute not a little to this result. The pressure infuriates them, they throw themselves against each other, burst from the ranks, or press out the weak ones from the line, and may become so exhausted in the struggle as to be unable to keep up.

That such a charge must fail before an enemy capable of making any resistance is quite natural, and the fearful results to which it may lead are thus depicted by Mottin de la Balme, a distinguished French cavalry officer, in his description of the unsuccessful charge at the battle of Minden, in which he himself took part: "A corps of English infantry having, by its steady fire, dispersed the cavalry in its front, the corps of

gendarmerie and carbineers received orders to charge. They advanced at a gallop, in line, without intervals. Even at the start, the centre was heavily pressed upon by the wings; the pressure then rolled back to the flanks, particularly to the right. The infantry waited until we were within fifty paces, and then opened a fire from the centre toward the flanks. The horses made desperate efforts to break away outward and avoid the fire. The pressure now became so galling that men and horses overturned each other and rolled about in helpless confusion. Few were killed by gunshot wounds, but, with the exception of about ten in every squadron, they were all torn from their horses, trampled to death, or had their limbs broken. The few that remained mounted were carried, some right through the enemy's ranks, others to the rear of the field. Had we advanced with only half intervals, the issue would have been very different. The attack would have been made with speed and impetuosity, the horses would not have broken away to the right and left, and the English infantry would have been ridden over as at Fontenoy."

The charge in an oblique line is particularly appropriate when our line is smaller than that of the enemy, whose flank may thus be turned. But an oblique line which is not formed in echelon, requires great exertion to support it, and a separation is easily effected. Hence this mode of attack is seldom employed.

The charge in echelon possesses the important advantage of always keeping one part of the line in safety. The enemy can thus be harassed, while our strength is preserved. With echelons we can deceive the enemy without materially changing our position or losing or gaining ground. The visual line may be easily changed at discretion, and consequently the flank of the enemy quickly gained. Echelon movements unite the advantages of making front on all sides; of quickly profiting

by the weakness of the enemy; of choosing the point and moment of attack, and of surprising the enemy without exposure to surprise. With single echelons, charges can be made much more vigorously and speedily than with a line. They, moreover, disturb the enemy's infantry by their frequency, and prompt him to expend his ammunition, which will be especially the case if the attacks of several echelons, as in Figure 20, are directed successively upon the same point. These attacks are in reality charges in column, with this advantage, however, that the path of the later squadrons is less encumbered with the debris of the preceding ones.

Fig 20.

The charge in column is employed against infantry formed in masses. "When cavalry," says Von Bismark, "has occasion to attack infantry formed in masses, it should be placed in open column of squadrons, with double intervals, and attack

progressively. The leading squadron receives the whole and first fire. If it remains steady, and penetrates the line, the second and third follow quickly after, in order to perfect the defeat. On the other hand, should the squadron which commences the attack give way, as is generally to be expected, it must retire from both flanks to leave the course of the second squadron clear; it should, however, re-form in rear of the column. The second squadron should execute its charge with such rapidity that the infantry cannot have sufficient time to reload. It may be presumed that infantry which believes the cavalry to be retiring from its fire, will be shaken when, while reloading, it suddenly sees a new line of cavalry advancing through the smoke."

Many objections have been raised against this formation of cavalry in column, generally by theorists, not cavalry officers. What, say they, must become of these deep columns, if exposed to the fire of the enemy's batteries? But we have already shown that great cavalry attacks do not commence the battle. They indulge also in comparisons drawn from Mechanics, to prove that one horse does not push another forward. If comparisons are needed, waves or cataracts, perhaps, would serve the purpose better. The object of charges in deep columns is not alone to force the front ranks forward, but also to throw a greater number of horsemen upon some given point, than could be done by an attack in line. Having broken through, some squadrons will attack the first line in flank and rear, and the others rush upon the second line and the reserve. Immense results have been thus obtained, and, of course, not without considerable sacrifice. The same objections and comparisons would seem equally applicable to infantry, yet the irresistible power of its columns of attack is never questioned. Indeed, it is not exactly the bodily contact of the men that imparts the impulse, since each division is somewhat separated from the following

one by a certain interval; but this deep formation gives to the entire mass such a consistence and solidity that, so long as the rear of the column moves forward, the head cannot keep back. To a certain degree, the same is true of cavalry. A regiment formed in columns of squadrons acquires a force of penetration far greater than in line; not that the squadrons in the rear do actually push forward those at the head, but they support them so closely that the entire column, so to say, forms a compact body, all the parts of which contribute to increase the power of the shock, whose effect is thus rendered more destructive.

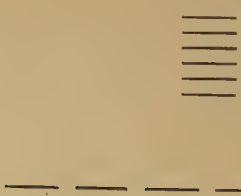
Besides, independently of the material effect, we all know what influence moral impressions exercise upon the minds of the soldiers, and the extraordinary energy which confidence gives them. Now, what can so completely inspire this confidence as the assurance of being well sustained and followed up by solid reënforcements? Add to this, that those who take the lead feel that they fight under the eye of their comrades; noble instincts thus stimulate to greater ardor, while the certainty of being trodden down under the feet of the following squadrons in case of failure, creates in the weaker hearts of the leading squadrons a force of impulse which must overthrow any obstacles that stand in their way. The fire of the enemy's infantry, the depth of its masses, as well as its bayonets, will undoubtedly offer some resistance; but so formidable a shock, receiving a simultaneous and continuous impulse from the whole depth of the attacking column, cannot possibly be arrested. Only picture to your mind the imposing spectacle of a mass of cavalry of sixteen or twenty-four squadrons, advancing at full speed on a depth of four squadrons. The stoutest hearts may reasonably quail, and this impression itself will be no small chance of success.

Great, indeed, are the results which may be achieved by charges in column. But immense as they have often been, let

it not be supposed that such charges are in every case preferable to charges in line or in echelons, which best suit most circumstances. The attack in column should be reserved to strike some great blow in those decisive moments when nothing should be spared, and when it is important, at any cost, to break the lines of the enemy. The coup d'œil of the general who commands the cavalry will seize upon the exact moment when this audacious movement may be executed with some chances of success: it should never be attempted under the immediate fire of the enemy's batteries, unless they have been sufficiently silenced, nor should the column be of needless depth.

It was a favorite manœuvre of Frederic the Great to combine the attacks in column and line, by forming a close column in front of the centre of a line of squadrons, as in Figure 21, and to bear down upon the enemy's infantry at full speed. When they had broken through, the two rear squadrons of the column wheeled outward and rolled up the disordered infantry, while the cavalry in line rode over them and followed the leading column, to be ready to fall on the enemy's cavalry, should it press forward to the rescue.

Fig. 21.



Similar formations have been proposed with closed columns as reënforcements in rear of the line, on the theory that either column or line must break through. If the enemy's cavalry is anywhere near, of course flank columns and reserves are indispensable, as in Figure 22.

Fig. 22.

An occasion very rarely occurs of attacking a single square, but when it does, let some of your infantry skirmishers first draw out theirs. Then send out some men as foragers, who will force the latter to gather into groups. Let them charge at speed, to compel rapid movements; for after infantry have run a little, they no longer fire so accurately. Then, leaving the skirmishers engaged with each other, let the horsemen gallop up and empty their revolvers at a range of twenty yards or less, that every shot may tell. They are perfectly safe from the skirmishers, who cannot fire at them without endangering their own troops, while the latter are very similarly situated. If, however, they draw their fire, it is so much the better, for a square that thus begins to fire at random is soon disordered and lost. If, on the contrary, the square stands firm, send out another party as foragers, on the same errand as the first, who have, meanwhile, returned to attack the skirmishers. These, who have already been kept busy by your infantry, ought to succumb between both; if not, again send out another party. If this game be kept up for some time, it is likely to give the cavalry a good chance against the square, unless it should happen to be protected by natural obstacles: in that case, let it alone.

Systems of oblique squares, squares in echelons, and checker-

wise, which appear so formidable, are by no means as strong as they seem, unless the extreme flanks are inaccessible to cavalry. For, when one of the outer squares has been broken, they are all in danger; the fugitives of the first square will shield the cavalry from the fire of the next, which will be carried off by the stream, or broken through, and thus each successive square must give way, unless cavalry be at hand for the rescue. The proper mode of attacking a system of squares is thus stated in the "Maximes" already quoted: "When infantry in position does not stir, and also has some guns, if you must nevertheless overthrow it at all costs, repair to the extremities of its lines of squares, since to venture among its masses and be exposed to cross fire, would be too perilous and too uncertain. Attack one mass after another. Two squadrons, well led, may reasonably expect to break through a battalion, by adopting the following plan. Let both squadrons be formed in close column, as in Figure 23, perpendicularly to the capital of the salient to be attacked, and out of range. A dozen skirmishers deploy, who fire and gallop to the right and left, but not too far in advance, and mask what is going on behind them, especially on the capital. The first squadron A, divides into two parts $a'$, $a''$, one moving to the right, the other to the left, to menace the fronts of the square, and trot to the encounter. The second squadron B, having allowed these two parts to advance a little, starts in its turn at a trot, as soon as they begin to approach near each other. The two fronts threatened will undoubtedly open fire. At the first discharge, the second squadron commences galloping and charges vigorously. It has for its support the two troops of the first squadron, which, while trotting, have been passed, but continue to attract the fire of the fronts, which is not very damaging, however, on account of its great obliquity. The skirmishers close in by degrees and take the head of the charge.

Having reached the square, the cavalry must at all risks cut an opening. After entering, it gives the order to throw down arms, and carries away the prisoners, driving them toward

Fig. 23.

the reserve. In case of resistance, it uses the sabre mercilessly. If it fail, it must retreat at full speed, stooping low, and rally out of range. A charge that has failed must not be renewed on the same side, for the dead bodies of men and horses would break the shock at the second attempt.

Should the soil sink, or the horses slip and fall, or the skirmishers signal obstacles unseen at a distance, and which you may run foul of, the attack must be abandoned, for your men

would certainly be lost. If, however, there are any undulations, which a practised eye can detect even in an apparently level plain, and which might probably cover your cavalry during a great part of its run, by taking advantage of these you may often succeed in overthrowing the best infantry, almost without striking a blow. For instance, the chief of a battalion is on a hillock and sees in his front a few squadrons that threaten him. He stops and forms square, believing himself quite safe because he commands his adversary. The latter observes, on the left of the square, a small hollow that borders it at two hundred yards, where his horsemen would be quite protected from the fire. He moves, as if to retreat, toward that point, enters it in open column, and, having attained a level with the battalion, gives the command, 'Left into line wheel, gallop, march,' and charges immediately. In all probability he will be discovered too late to suffer from a murderous fire, and will succeed in his attack."

We have already adverted to the importance of reconnoitring the ground over which the attack is likely to be made. This is, perhaps, still more necessary with infantry before us than with cavalry, because the former can so much more easily avail themselves of any advantage the ground may offer for their protection. The fatal consequences to which the neglect of such precautions may lead, are fearfully illustrated by the following occurrence at the battle of Talavera, as recorded by Colonel Beamish: "The French divisions of Villatte and Ruffin had advanced to turn the British left, and Anson's brigade was ordered forward to check the movement. The French, seeing that they were threatened by a charge of cavalry, formed squares, and the horsemen advanced upon the bayonets, the Twenty-third light dragoons taking the larger square, which had formed on its front, and the First hussars, the two smaller squares on the left, the brigade being formed in two lines on a

front of five squadrons, with the usual intervals. But just as the charge had commenced, a hollow cleft, covered by long grass, presented itself in front of the leading squadrons. Too late to pull up, the foremost horsemen rode headlong into the hollow, and a frightful scene ensued. Some tumbled in and over the ravine; some scrambled through it, while others leaped boldly across the chasm, and gained the other side, but great confusion was the consequence. In front of the hussars the ravine was from six to eight feet in depth, and twelve to eighteen in breadth; while, widening in front of the dragoons, it was there also more shallow, and the greater part of the regiment managed to get across, but so dispersed and in such confusion that they were unable to make any impression on the squares; and the French artillery sweeping their ranks, they were obliged to give way, leaving nearly half their number on the field. The hussars suffered less, in consequence of their flank not being exposed to the fire of artillery, and the rear squadrons crossing the ravine more cautiously, on seeing the fate of the front; but the unlooked-for impediment having thrown the first line into disorder, few horsemen arrived before the bayonet of the enemy, and no impression was made upon the squares. Had the ground in front of the brigade been carefully reconnoitred before the action, this calamity could scarcely have occurred."

When attacking artillery, the charge should be first directed against the troops that cover the guns. Guns that are separately posted must be attacked in open order. Skirmishers advance in a curved line, the extremities of which move forward. They fire little, but advance, seemingly without any purpose, until within range of the guns, when they charge them with the rapidity of lightning, opening from the centre and making for the flanks of the battery. The gunners are thus obliged to alter their aim, and lose time. If there is much

dust, or the smoke has not cleared away before the batteries, they will probably not observe the change of direction, and continue to fire straight to the front, while the horsemen pour in upon their flanks, and immediately fall upon the gunners, to prevent them from serving the guns. Meanwhile the cavalry reserves advance, part of them charging the escort, the remainder securing the battery. The most advantageous moment for an attack is when the guns are unlimbering or limbering up. Even a few seconds gained are of the greatest value to the assailants, who must always dash in at the top of their speed, as soon as the signal is given to charge. If, after getting into the battery, they discover a superior force of the enemy coming to the rescue, they should forthwith do all possible damage, killing the drivers, cutting the traces, spiking the guns, breaking the rammers, &c., &c., and then trust to their horses for safety.

One of the most remarkable cavalry exploits on record is that achieved by the cuirassiers of Montbrun at the battle of Borodino, where they captured the great redoubt in the middle of the enemy's position and defended by the flower of the Russian infantry. The details of this brilliant achievement, as related by Alison, are full of interest, and show what may be effected by resolute cavalry, bravely led, and confident of success. "Augustus Caulaincourt, just separated from his young and beautiful bride only a few days after their marriage, fell into the command of Montbrun's cuirassiers by the death of that general in the early part of the day, and was directed to penetrate through the Russian line, and, wheeling around, enter the redoubt by its gorge. 'You will see me immediately,' he replied, 'dead or alive;' and setting off at a gallop at the head of his followers, the glittering mass was soon lost in a volume of smoke, as he approached the intrenchment. The Russians hastened to support the point of attack. Caulaincourt, advan-

cing with the utmost rapidity, overthrew the regiments of horse which Kutusoff opposed to him, while the great redoubt continued to vomit forth an incessant fire upon its assailants. Eugene, with his infantry, was advancing to the attack; the bayonets of his troops were already gleaming on its slopes, when the columns of the cuirassiers were seen ascending through the clouds of smoke which enveloped the intrenchments. Its sides seemed clothed in glittering steel, and the fire from its summit, after redoubling in fury for a few seconds, suddenly ceased. The flames of the volcano were extinguished in blood, and the resplendent casques of the French cuirassiers appeared, when the smoke cleared away, above the highest embrasures of the intrenchment. Young Caulaincourt met a glorious death at the entrance of the redoubt."

Against whatever troops the attack may be directed, cavalry, infantry, or artillery, the charge must be promptly decided, and vigorously executed—always made and carried out at full speed. The first object is to break through and disorder the enemy's array, then let the sword complete his discomfiture. Powerful horses, urged to their utmost speed, kept straight in the ranks and well together, seldom fail to accomplish the first object; sharp swords and strong hands will do the rest. Jomini, however, is not of opinion that impetuosity is always an advantage in a charge of cavalry upon cavalry. We quote from Mendell and Craighill's translation: "The fast trot," he says, "seems to me the best gait for charges in line, because everything depends in such cases upon the ensemble and good order of the movement—things which cannot be obtained in charges at a fast gallop. Galloping is proper against artillery, when it is important to get over the ground as rapidly as possible. In like manner, if the cavalry is armed with sabres, it may take the gallop at two hundred yards from the enemy's line, if it stands firmly to receive the

attack. But if the cavalry is armed with the lance, the fast trot is the proper gait, since the advantageous use of that weapon depends upon the preservation of good order; in a mêlée, the lance is almost useless. If the enemy advances at a fast trot, it does not seem prudent to gallop to meet him; for the galloping party will be much disordered, while the trotting party will not. The only advantage of the gallop is its apparent boldness, and the moral effect it produces; but if this is estimated at its true value by the enemy, it is reasonable to expect his firm and compact mass to be victorious over a body of horsemen galloping in confusion. In their charge against infantry, the Turks and Mamelukes showed the small advantage of mere impetuosity. No cavalry will penetrate where lancers or cuirassiers at a trot cannot. It is only when infantry is much disordered, or their fire poorly maintained, that there is any advantage in the impetuous gallop over the steady trot. To break good squares, cannon and lancers are required, or, better still, cuirassiers armed with lances."

That good lancers are the best cavalry to break the ranks of infantry, and that, more than any other, they must keep well together to make the best use of their lances, is generally conceded. But that the fast trot is their proper gait, and that it would be injudicious to advance at full speed against a line moving at a fast trot, does not at all comport with the precept of Frederic the Great, "to charge with the greatest possible speed and force," which, ever since, has been an established rule with all good cavalry. Mere impetuosity, without coherence, unquestionably avails little against order and discipline; and it is for this reason that the Mamelukes, Arabs, Sikhs, and all other irregular horsemen of the East, whose superiority lies in their horsemanship and skill in single combat, not in any tactical combination, have always been defeated by the very worst of European regular cavalries. But if their undisciplined

swarms, charging without concert or compactness, fail to make an impression, this surely cannot be accounted a valid argument against the advantage naturally resulting from impetuosity combined with order and regularity. That these should not be sacrificed, but that they all should be duly maintained, is a principle recognized by all leading authorities on cavalry, and rightly laid down as a rule in Cooke's new cavalry tactics, § 501, which, while prescribing the trot against "a body of horsemen galloping in confusion," gives the criterion of a good charge in the following brief and pithy instruction: "The charge is made with the greatest velocity and regularity possible; in speed and order there must be a mutual sacrifice; seek, in the charge, with judicious proportion, to attain the maximum of each."

To be successful, the movement of cavalry must be rapid and unexpected, and bear the character of inflexible confidence. The charge should never be commenced with half intention, as if to try first whether the enemy will stand. That must be well settled beforehand. To yield in open action never dishonors, but to advance with apparent bravery, and then to retire faint hearted when the enemy shows resolution, dishonors and disgraces forever. If a charge prove successful, no time for thought should be given to the enemy. "Nothing is done so long as anything remains to be done," is an axiom which then finds its special application. The impression which a successful charge of cavalry makes on the enemy must be rapidly sustained in order to give a decisive turn to the battle.

Here it is the talent of conducting which determines; for, too often, regiments burn with impatience to attack the enemy, but leaders destitute of military character are at their head, and waste the valuable, the irrecoverable moment in empty considerations of "ifs" and "buts." The Prince of Condé, at the age of twenty-two, routed the Spaniards at Rocroy by the

prompt impetuosity with which he led the attack at the head of his cavalry. He so commenced the battle, that a corps of musketeers, placed in ambush on his right flank by Don Francisco de Melos, the Spanish general, was cut down; he next rushed upon the cavalry of the left wing of the enemy, drove it upon the second line, and cut both to pieces. Then, sending a part of his victorious cavalry in pursuit of the flying enemy, and collecting the squadrons of the second line, he wheeled them to the left, and attacked the enemy's infantry in its uncovered left flank. Several battalions had been already ridden down, when he learned that his left wing was unfortunate, and was retiring in disorder. Swift as lightning he hurried his cavalry thither, and in the most favorable moment assailed the Spanish cavalry of the right wing, disordered by a successful charge, liberated the prisoners, and put to flight all who escaped the sword. The Spanish infantry, deserted by their cavalry, formed into a deep column and withdrew. Several attacks of the French cavalry were received with the whole camp artillery and small arms, and beaten off. Finally, however, this old steady infantry yielded to the repeated onsets of the prince's cavalry, and twenty thousand men of the best infantry of that day, which, under Charles V and Philip II, had made Europe tremble, was almost entirely destroyed by a body of cavalry exasperated by the heavy losses that it had sustained.

The rapidity of cavalry often changes the fortune of a battle, if the commander of a division not yet engaged possesses presence of mind. At such critical junctures, everything depends upon seizing that very moment to fall upon the enemy, when he is pursuing our squadrons in the intoxication of success. That moment cannot be pointed out; it must be felt. A single squadron may at such times work miracles. To illustrate this, nothing better can be quoted than what occurred at

the battle of Medellin, alluded to in another chapter, and won by Marshal Victor over the Spanish general Cuesta, in 1809, after the French were already in full retreat. The turning point of this battle was the well-timed attack made by a captain at the head of a squadron of hussars, upon six Spanish squadrons. These were advancing rapidly in wild pursuit, but were overthrown by the charge of one single squadron, executed in good order. General Latour-Maubourg, following up this first advantage, turned it to so good account, that in less than five minutes, says an eyewitness, the Spanish army presented nothing but a chaotic mass of fugitives, leaving all their guns and several thousand prisoners in the hands of the victorious French.

History is full of instances which show that battles are much more frequently gained by the assailants than by the assailed. The attack exalts strength to power. Fortune favors the bold, and even when the one party is weaker than his foe, that weakness is surely concealed by daring and confidence. Herein the characteristic of cavalry preëminently consists; and hence we may readily understand why this arm so rarely possesses generals of distinction, especially in systems where its chief officers are appointed by chance or seniority. Without a bold commander, cavalry will furnish nothing worthy of record in the annals of history; and a general who does not glow with this conviction succeeds only when his adversary's ideas and temper are cloudier and colder than his own, or when he is more unskilful and remiss.

A great cavalry general, that is to say, a general who possesses the talent of ably manœuvring masses of cavalry, is as rare a phenomenon as a great commander-in-chief. The qualities essentially requisite in him are a quick coup d'œil, a calm and ready judgment, indomitable energy, courageous decision, rapid execution—in a word, abundant tact and talent. Strik-

ing instances are recorded of the opposite effect produced by different commanders upon the same troops. When Murat upbraided Junot for his inaction, after crossing the Prudiszi, Junot alleged, in excuse, that he had no orders to attack, that his Würtemberg cavalry were shy, their zeal insincere, and that they could never be emboldened to charge the enemy's battalions. Murat answered these words by deeds. He rushed on at the head of the troops, who, under a different leader, were very different men. He urged them on, launched them against the Russians, overthrew the skirmishers, and then, returning to Junot, said: "Now finish the business; your glory and your marshal's staff are still before you."

The art of attack, we have already said, is the most difficult part of cavalry tactics. The general rules which determine the opportunity of an attack may be calmly applied, but the tranquillity and coolness which are indispensable to success do not extend to the engagement itself. Deliberation can be exercised by a cavalry leader only before the execution of the charge. When once the trumpet has sounded for the attack, all reflection is swallowed up in the ardor of inspiring the troops. "But," says Von Bismark, "because the charge requires the application of every faculty, and the cavalry is thereby wrought up to an intense paroxysm of excitement, which is succeeded by an extreme exhaustion; and because the effective charge is the immediate result of this violent exertion, and the alignment is apt to be lost on account of the unequal power of the horses; therefore, at the moment when the gallop is increased to the charge, no means must be unemployed to inflame, even to madness, that vehemence of enthusiasm which inspires all brave cavalry during an attack. Strength is exhausted in the application, and in proportion to it; so that, after the maximum of exertion comes that of prostration. We should, therefore, endeavor to insure success before the excite-

ment subsides. Cavalry is never feebler nor more easily overcome than immediately after a successful charge. Before the horses recover their breath, and the men regain their spent energies, tumultuous noises are heard, each individual clamorously recounts to his friend or comrade what has specially befallen himself, but no word of command is heeded. In vain the trumpet sounds the recall—in vain the senior officers endeavor to re-form the line; and should a fresh force of the enemy advance at such a moment, the attacking party will retreat as quickly as it before rushed on, unless a second line, pushed forward in proper time, provides against such misfortunes."

This characteristic description of a cavalry charge, and the evidence which it affords of the necessity on all occasions of a reserve to avert the mischief too often caused by unduly prolonging a successful onset, were strikingly illustrated at the battle of Waterloo, in an episode subsequent to the one related above. In the charge of the English cavalry, the regiments intended as reserves, excited by the enthusiasm of the moment, and heedless of previous orders, joined the attacking squadrons. When, therefore, Lord Anglesea, endeavoring to restore order after the confusion which followed the charge, sought for the supporting regiments, they were nowhere to be found. The French reserve of lancers under Colonel Bro then came down upon the exhausted assailants, and a fearful slaughter ensued, the English cavalry being saved from utter destruction only by the well-timed succor of their light-cavalry brigades. The details of this remarkable combat are very instructive, and the following abstract, made principally from Captain Siborne's account of the battle of Waterloo, will furnish abundant matter for study and reflection.

The Earl of Uxbridge, perceiving the advance of the French cavalry by La Haye Sainte, and also the approach of

the infantry columns, which formed the attack on the English left wing, decided on a simultaneous charge by the heavy-cavalry brigade of Lord Somerset, consisting of the First and Second life guards and First dragoon guards, with the Blues in reserve; and by that of Sir William Ponsonby, consisting of the Royal dragoons and Enniskillens, with the Scots Greys in reserve. Lord Anglesea placed himself in front of the left of Somerset's brigade, to be about the centre of the line when both brigades should unite. The light cavalry were on either flank.

The French line of cavalry, as it advanced, presented an imposing appearance. They had ascended the brow of the ridge, on which the Anglo-allied infantry were posted, ready for their reception. A damaging fire was opened upon them from two English horse batteries; but a few seconds sufficed to restore order, their trumpets sounded the charge, and, amid shouts of "Vive l'Empereur," they rushed to the attack. The British household brigade, animated by an equal degree of enthusiasm, had already been put into a charging speed, and, just as the cuirassiers came close upon the squares and received a fire from their front faces, the two lines dashed into each other with indescribable impetuosity. The shock was terrible. The English, in order to close as much as possible upon the French cuirassiers, whose swords were much longer than their own, seemed for a moment striving to wedge themselves in between the horses of their infuriated antagonists. Swords gleamed high in air, now clashing violently together, now clanging heavily upon resisting armor; riders, vainly struggling for mastery, quickly fell under the deadly thrust or well-delivered cut, while horses, plunging and rearing, staggered to the earth or broke wildly from the ranks.

The first collision, however, did not occur at once along the whole extent of the opposing lines, for Somerset's was not parallel to that of the cuirassiers, and as its right was thrown

forward, this came first in contact with the enemy, and thus ensued successive partial shocks in the direction of the allied left, until interrupted by a hollow way, intersected by another road. The cuirassiers on the right of the French were suddenly thrown out of their speed by coming on this hollow way, into which they descended abruptly and confusedly, and as they began to urge their horses up to the opposite bank, they beheld the Second life guards coming in full speed toward them. Immediately they filed off along the hollow road, pursued by this regiment, which likewise had become disordered by pushing down the steep banks adjoining the intersection of the roads. The cuirassiers, after having rushed in upon their own infantry skirmishers, who were congregated in that quarter, reined up their steeds, and, fronting their pursuers, engaged them individually.

Ponsonby's brigade having meanwhile come up, the whole charged the French infantry, part of which yielded. The English had the advantage of the declivity, and mowed down the mass, which, bending under the pressure, spread out in all directions. The Greys, although intended to form the reserve, had come up in line with the other regiments, and those who had forced their way through the mass, without waiting to re-form, rushed onward against the leading columns of the French right brigade. This body, astounded at the suddenness and wildness of the charge, were unprepared to receive it. Their outer files opened a destructive fire; but to such a degree had the impetus of the charge been augmented by the rapid descent of the slope, that the horsemen had neither the power nor will to check their speed, and, plunging with irresistible force into the thicket of bayonets, the entire column tottered and sank, crowds of prisoners attesting their discomfiture.

The English brigade was equally successful along the remainder of the line. One of the French columns was seized

with a panic, and, after an irregular fire, faced about and endeavored to regain the opposite side of the ledge. But the English were upon them before this could be effected, and the whole became so jammed together, that they were completely helpless, and gradually a scattering flight ensued, many throwing down their arms and surrendering. The centre regiment did not come quite so soon into combat with the French infantry as the flank regiments, but they dashed down with equal impetuosity, breaking instantly through the squares in front of them, and making tremendous slaughter. Meanwhile the household brigade continued to charge down the slope on the right and partly on the left of La Haye Sainte, pressing the rear of the cuirassiers, which became choked up between two high banks. Many, finding their retreat impeded, faced about, and a hand-to-hand encounter ensued, which was suddenly terminated by a destructive fire poured down upon the life guards from the top of the banks. Quitting this unprofitable struggle, they now boldly ascended the enemy's position, in which they were joined by the others, without any semblance of regularity, madly pursuing their wild career.

It was then that Lord Anglesea, seeing the danger to which the whole cavalry division was exposed by recklessly continuing the attack, eagerly sought for the support upon which he had relied; but none was to be found, for the reserve regiments had joined without orders in the general charge. In vain did he direct the halt and rally to be sounded—neither voice nor trumpet was heard; and in a few seconds more, both brigades were seen crowning the enemy's position. The Greys, with many of the Royals and Enniskillens, dashed among the batteries, and then, wheeling sharply to the left, rode along the line of guns in that direction, sabring the gunners and stabbing the horses, until they became aware of a body of French lancers moving down upon them.

They then fell back, but with the horses so blown and exhausted, that they were soon overtaken by the lancers. Both brigades were now in full retreat. Somerset's regained the position as well as it could, but Ponsonby's, and particularly the Greys, suffered severely from the French lancers, the great part being in a state of the utmost confusion and exhaustion, while their opponents were mounted on horses perfectly fresh. This brigade was reduced to a single squadron, and the two, which had gone into battle two thousand strong, could now scarcely muster two hundred sabres.

One of the greatest difficulties in the management of cavalry is to know when to stop a successful attack—how to reap the greatest benefit with the least loss. Excitement, too, often overpowers reason, and the good effects of the first onset are often lessened or annulled by protracting the combat. Charges, gallant and daring in their character, have not seldom been converted into disgraceful defeats or dreadful losses by the culpable negligence of leaders, who had not provided reserves to protect the flanks during the attack, or to repel an advance of fresh troops. The English cavalry, especially, have often suffered on this account. "They were superior," says Nolan, "to that of most nations in the headlong courage of the men, the quality of the horses and equipment, but unfortunately inferior in tactics. The published dispatches of our greatest commander bear too frequent testimony to the fact that our officers often neglected to provide reserves when they charged, or to take other necessary precautions, the want of which entailed occasional defeat upon our troops, in spite of the determined bravery which they displayed upon all occasions."

To strike great blows, cavalry must act in large masses. However, to be prepared for all emergencies, it has been customary to attach a regiment of cavalry to each division of infantry, as a support in conflict, and to prosecute and complete

any advantage gained. Infantry now fight on all kinds of ground; a level plain is no longer sought for as a field of battle; and in an enclosed country, cavalry is required to act as an auxiliary to infantry or a protection to artillery, and consequently must be distributed in small bodies. But the great bulk of cavalry should be kept in reserve, united in one command, under a special general of cavalry. This formation of strong reserves is the only effective method of reënforcing the divisional cavalry, wherever the incidents of battle may require, and of providing the advanced and rear guards with strong detachments of this arm, without disorganizing the divisional squadrons: it facilitates sudden assaults upon the weak part of the enemy; it offers the means for powerful diversion, and enables us to follow up the victories of the infantry, or to save their reverses from fatal defeat; in fine, it allows us, as at Waterloo, to disengage our battalions from the pressure of a too numerous cavalry, and to yield them always a sure protection against the attacks of the enemy's infantry.

During the heat of action, it is much easier to reënforce the divisional cavalry with several squadrons from the reserve, than to restore a single squadron from the divisions to the reserve. Division generals are apt to claim as many squadrons as possible; thus the strength of cavalry is often frittered away, and when the moment for striking a decisive blow has come, they are not at hand. It is to this neglect of one of the first rules of modern tactics that the author of "Die Kavallerie der Jetztzeit, etc.," ascribes the events so fatally contributing to the defeat at Jena; and it is partly to the same neglect that Major Dammitz imputes the loss of the battle of Ligny, where the cavalry were distributed without any ostensible object over the whole battle field. The threatened parts were thus from the first moment overburdened with troops, and the difficulty of withdrawing them, when once engaged, deprived the Prussians

of the proper support of their reserves, while Napoleon had his yet intact.

"The leader to whom the cavalry is intrusted on the day of battle," says the Archduke Charles, "should never be induced, by the representations of other officers, to partition the mass of his cavalry, nor attempt to give them insufficient assistance with the fragments of it." Seydlitz and Ziethen always acted with large masses; the generals of the present century have too much operated with small detachments. This fault is clearly established in a magnificent article on cavalry, found among the papers of the late Marshal Radetzky, and published in the Austrian Military Journal. This illustrious warrior, relating what he had seen during a long career, distinctly points out the reasons of the annihilation of the splendid cavalry of the allies, and the causes of the success of the French cavalry, materially inferior to the former. He ascribes them to the genius of Napoleon, who, without any great affection or special talent for this arm, thoroughly appreciated its immense capabilities. And his successes would have been still more prodigious, if his generals had not been obliged to make up by instinct what they lacked in knowledge. Since that epoch we have had time to meditate on the proper mode of conducting cavalry in war, and science has deduced rules from the accumulated experience of a twenty years' unceasing struggle. Those who have studied them have now an opportunity to put them into practice. Let them see and observe, and add their experience to that of those who have preceded them, that they may contribute their share toward the success of an arm, which, in spite of all indifference and ignorance, is yet destined to play a glorious part on the battle fields of the future.

# CHAPTER V.

## FIELD SERVICE.

The services to be performed by cavalry may be considered under two different heads: at one time, when the army is gathered into a circumscribed space, to put forth one of those prodigious exertions of power which form epochs in war, the cavalry, united in masses, must render these explosions the more terrific and destructive, by rushing on the enemy's line at a moment when it has already been struck and weakened by fire; at another time, when the army, collecting its forces, either for battle or for recovery after battle, is scattered over an extended space, the cavalry must then provide for the safety of the troops.

This duty devolves chiefly upon the light cavalry, and its service is one of the most important in the field. With a good light cavalry, an army is in comparative security; without it, it is constantly beset with danger. At once the eye and the feeler of the army, they are always hovering in advance, on the flanks, and in the rear of the columns, to prevent all possibility of surprise; again, they are unceasingly engaged in harassing the enemy, in cutting off his supplies and communications, in reconnoitring, &c.; and occasionally they distinguish themselves by deeds of daring, which partake of the wonderful

and the fabulous, and which would be accounted incredible, were they not in all points authenticated.

The brilliant expedition of General Seydlitz, so graphically described by Archenholtz, against Gotha, which, though strongly occupied by infantry and artillery, he captured with fifteen hundred men, is a proof that a brave leader may attempt the most hazardous enterprises, when he knows how to estimate circumstances and take advantage of opportunities. "Having withdrawn to a short distance from the town, he placed the principal body of his cavalry in order of battle, and sent one regiment of dragoons to a defile half a mile in his rear, with orders to form an extended front in one rank. Meanwhile the allied troops entered the town, and, the court being present, the French had an opportunity to display their wit and gallantry in complimenting the ladies on their liberation from the unpolished Prussians, who never quitted their pipes, but suffocated them with the smoke of tobacco. Seydlitz, having now received reënforcements, resolved to advance and attempt to dislodge the enemy. He sent forward the hussars to attack the advanced posts and followed with the regiments of dragoons in one rank. The general was about to sit down to table when the news was brought that the enemy was in sight. The Prince of Hildburghausen, seeing this apparently grand line of cavalry, which Seydlitz had so skilfully arranged, imagined that the whole Prussian army was on its march to support him. Soubise was a commander of too much experience not to be convinced that hussars dare not attack infantry without support; and, therefore, having expressed his regret that the unmannerly conduct of the Prussians should deprive him of the agreeable society which he enjoyed, he took a hasty leave, mounted his horse, and having made no dispositions of his army, gave the word, "Sauve qui peut," and galloped out of the town, followed by his suite."

In the same way, General Lasalle, with only five hundred hussars, took Stettin, defended by six thousand Prussians with two hundred guns; and Murat, as we have seen, forced the Prince of Hohenlohe to capitulate, having driven him into Prentzlau with his cavalry only. In the same year, 1806, General Curély, at the head of twenty hussars, and fifty miles away from the army, filled Leipsic with terror and consternation, though it was held by three thousand Prussian infantry. The same officer, in 1812, at Polosk, at the head of one hundred chasseurs, took twenty-four guns, and made the general-in-chief of the Russian army his prisoner. In 1808, the passage of Sommo Sierra, partly intrenched and defended by a numerous infantry and twelve pieces, was forced by one squadron of lancers of the guards. And, if we would learn what may be done by a single platoon, let us open the official record of service of Lieutenant, afterward General Desmichels, and read that "on the 28th of October, 1805, after the battle of Ulm, when the Archduke attempted to make a junction with the army of General Werneck, Lieutenant Desmichels, being very near Nuremberg, with thirty chasseurs of the imperial guard, attacked and captured five hundred men of infantry, two standards, twenty pieces of cannon with their caissons, charged and pursued on a road four hundred dragoons of Thurn, made one hundred prisoners, killed and wounded as many, and took with his own hands the colonel of the regiment." After such deeds we may exclaim with Marshal Saxe: "There is no telling what cavalry cannot accomplish."

Expeditions of this kind, designed for the execution of some secondary operations, connected with those of the main body, and made by numbers varying from a few up to an entire division, are called detachments. According to the nature of the duty to be performed, detachments are composed of infantry or cavalry, or of both; indeed, sometimes, if very large, of

infantry, cavalry, and artillery combined. But whatever be their size, when near the enemy, they always employ the same measures of precaution which are customarily taken by armies, and surround themselves with a cordon of scouts, flankers, sentinels, and vedettes, which, if properly disposed, render all surprises impossible. When infantry and cavalry act in concert, as is usually the case, the service of guarding the main body devolves on both, and is so apportioned, that the cavalry performs in open country everything that requires celerity and despatch, while in broken or enclosed country, the infantry attends to those parts which are less accessible and demand a more careful scrutiny. Thus mutually assisting and supporting one another, the two, coöperating, are able to effect, in a comparatively short time, and more thoroughly, what would require great labor and prolonged effort if each acted independently of the other. It is, therefore, by examining the nature of these duties as a whole, that we can better understand the details of those required of cavalry in particular.

An army or detachment in an enemy's country never moves unless protected by scouts and flankers. The former march some two or three hundred paces in front of the advanced guard, which they never lose sight of, neither of the neighboring scouts, with whom they must always keep up communication. For this purpose, the foremost detachment sends out three small groups, one in front on the road, the others to the right and left. Each group remains together, that is, the few men comprising it do not pass out of each other's sight or hearing. The flanking detachments are sometimes obliged to withdraw quite far from the road, in order to search the country more thoroughly; in this case each detachment takes the same precautions as the main body, and surrounds itself with similar small groups, one of which remains in front, while the others keep on the outside, toward the enemy. Communica-

tion between the main column and front, flank, and rear is maintained by soldiers marching singly and within sight.

The number of scouts should always be as small as possible, since it is not their duty to fight, but to look out for the enemy. Three men are generally accounted sufficient for each group, the eldest directing the two others. They must move noiselessly, without louder talking than necessity requires; be intent on their duty, and never fire except when they fall into an ambush, or are on the point of being made prisoners; it is then their only mode of giving alarm. They should avail themselves of any natural screen, such as hedges, woods, and slight eminences along their way, in order to see without being seen. As soon as they discover any hostile party, they stop and lie concealed, while one hastens to inform the commander of the detachment to which he belongs. If anything meanwhile occurs, they send again, but always without noise.

The scouts should most carefully explore the woods and ravines, and never pass near an embankment, a thick hedge, wall, fence, or other object of the kind without examining the other side. They must inspect the grain fields, farmhouses, barns, and all buildings likely to conceal an enemy; one of them going in, the others remaining at a distance to give the alarm. Before entering a village, the advanced guard halts, that the scouts may have time to search it, and obtain information respecting the enemy. They pass through the streets, look into the windows, yards, and enclosures, have a few houses opened, examine the church and the largest buildings—in a word, every place in which the enemy might hide; and they do this the more inquisitively when the latter is near, or the village suspected.

As these stoppages are very wearisome to large bodies of men, it is customary with strong advanced guards to detach an extreme advanced guard, that the fatigue may fall on this

portion alone, which, as soon as the search is made, regains its distance by a more rapid gait. In such cases the latter furnishes the scouts, while the flankers are provided for by the advanced guard proper, parallel to which they march on the right and left of the road. When the flanking detachments move off too far to maintain a safe communication by means of single soldiers, this duty is assigned to intermediary detachments called flank patrols, which, being beyond supporting distance from the main column, must observe all the precautions prescribed for bodies marching independently. The group of scouts on the main road is sometimes made a little stronger than the others, say five men instead of three, to enable them to extend their explorations to a greater distance, if this is thought useful. Hills are always objects of importance. If there be any around, even within a distance of two thousand yards, some one should be sent to reconnoitre. He should move at a swift pace, and, when nearly at the top, creep up slowly and stealthily, and just far enough to look over it, taking off his hat, so as not to be seen on the other side. No definite rule can be laid down for the exact distance there should be between the advanced guard and its detachments, and between these and their scouts. It varies, according to circumstances, from one to two thousand yards for the former, and from two to six hundred yards for the latter, and depends mainly upon the state of the weather, the nature of the ground to be examined, and the strength and distance of the enemy. On a night march, scouts and detachments are all drawn in nearer to the advanced guard; and as the danger increases, precautions are increased in proportion.

If the advanced guard had only to scout the country, no other than light troops would be employed; but often it has positions to carry, and to hold them against a numerous enemy until the arrival of the main body; moreover, it is constantly

exposed to serious attacks. Its composition must, therefore, depend upon the strength of the main body; and if this is considerable, it will require not only light troops of all arms, but also infantry of the line, heavy cavalry, and even artillery of heavy caliber, all in suitable proportions, that the divers arms may lend each other mutual assistance and support.

The officer commanding the advanced guard is provided with good maps and telescope, and has with him some inhabitants of the country, to serve as guides, and to give him such information as he may need. Whenever he takes others, he places the former under good escort, that they may not escape, and sends them back at the first safe opportunity. It is of the utmost importance to him to be acquainted with the vernacular of the people; if he is not, he must have on his staff some officers familiar with it, preferring those who have already travelled or made a campaign in the country. He will question the travellers, deserters, and prisoners, on the position and strength of the enemy, on what is known or supposed to be his purpose, on the morale of his troops, the character of their chiefs, &c. Of course, he will obtain very imperfect knowledge from each one individually, but by collecting and comparing all their several accounts, he will be able to form a pretty correct idea of the composition of the different corps, of their strength, their respective position, previous movements, and other important matters. All answers should be immediately written down, to be communicated to the commander-in-chief, whenever they offer any interest, or throw light on the intentions of the enemy.

On taking his instructions, which he should always endeavor to get in writing, the commander of the advanced guard must thoroughly imbue himself with their sense, and not hesitate to ask from the general-in-chief a repetition or explanation of those which he does not clearly understand. He then com-

pares his maps with those of the general, makes such corrections as are necessary, regulates his watch by that of the latter, and agrees on the frequency of the reports he has to send. As this is usually left to his own judgment, he makes them as often as anything occurs, sometimes written, sometimes verbal; the latter, however, he always sends by officers, or intelligent non-commissioned officers, and only after having assured himself, by making them repeat twice over, that they have well understood them, and that the report will be made faithfully, and, as much as possible, literally. Such verbal reports must, above all, be short and clear, as for instance: I have reached A.—The enemy is in force. He has taken up a strong position. He has infantry and cannon.—I want more infantry.—Must I hold on or retire?—I am outflanked on my left, and obliged to fall back.—I am losing many men.—I have taken up positions near the ravine B.—The enemy halts. He draws back his infantry. This looks like a ruse.—Numerous columns march in the direction of C. They are mainly composed of cavalry. The hussars, which I had opposite, have been replaced by lancers and cuirassiers.—All the bridges on river D are destroyed; it will take three hours to repair them.—I have taken two hundred prisoners and one gun.—The enemy makes a false manœuvre; he seems to be in confusion.—He has abandoned part of his baggage.—The enemy is in full retreat. I urge him on with all my cavalry.—Three hundred more prisoners are brought in.—The roads are very bad; my artillery moves but slowly, &c., &c. When circumstances require a written report, and there is danger of its falling into the hands of the enemy, a safe place to conceal it is in the barrel of the revolver; should there be no way of saving it, the discharge, of course, destroys it.

The commander of an advanced guard is always left more or less to his own discretion, however complete his instructions

may be. If his orders are to reach promptly this or that point, his simple duty is to carry them out vigorously and bravely. If, however, he is directed to follow the enemy cautiously, and to avail himself of all his faults, and of all the advantages that may offer, his task is vastly more difficult. In the latter case he feels his way gropingly, and never ventures upon any step, without weighing carefully the consequences of his moves, the chances of success, and the dangers of a repulse. In either case, the advanced guard must march in such order as to allow it to make front on every side; and every subdivision, each individual man must always be in place to be ready for any manœuvre at any moment. The commander must frequently ask himself, What must I do, were the enemy to appear? Good or bad, the answer must be given immediately. Hesitation before the enemy is the greatest of all faults, and the best dispositions lose all their worth if they are not effected at the right moment.

Everything must be carefully noticed. In abandoned bivouacs, the smoking and often bleeding remains may indicate the proximity, the numbers, the losses, fatigue, or demoralization of the enemy. The numerous and diverging tracks of footsteps, wheels, and horses, at a branch road, together with what we learn from the country people, and through our own scouts, are all signs which, compared with each other, and with our maps, may indicate the intentions and whereabouts of the enemy, and put us on our guard in approaching or following him.

When the advanced guard approaches a village, the cavalry either ride rapidly around it, or, if this is not practicable, halt and wait until the infantry has passed through. It is better even for the latter to turn it than to pass through, especially if it is of any length, because, as a general rule, it is prudent to avoid defiles, where an attack is always to be feared. The

scouts may have been negligent, and some enemy may be lurking in the houses, whence he can do a great deal of mischief before it would be possible to dislodge him ; and although such is not very likely to happen, the bare possibility will justify any measure of precaution. At cross roads, it is customary to indicate by branches of trees, or straw, stones, &c., which route the advanced guard has taken, that the main column, which follows at some distance, generally out of sight, may not be misled. In some cases it is better to leave a few horsemen behind. Roads and bridges in bad condition should be repaired with the utmost diligence by the mounted working parties that accompany the advanced guard, and which, after removing all obstacles that might retard the progress of the main column, rejoin their detachments as speedily as possible.

In very thickly wooded country, the advanced guard sends out additional scouts, who connect the extreme advanced guard with the flankers. This precaution is used because the first scouts may have overlooked some part whence a concealed enemy can assail the advanced guard. The second scouts will discover this enemy and give the alarm. The same precaution is taken by the main column, especially if it follows at a distance. In passing defiles which cannot be turned, the extreme advanced guard must, immediately after going through, redouble its vigilance in searching the surrounding country, for in such localities the enemy is very likely to lie in ambush, in order to attack the column before it has time to deploy. The leading detachment should therefore halt the moment it has passed, deploy if there be the slightest advantage in doing so, and send out flankers right and left as far as possible, while, at the same time, its scouts scan every hiding place in front. It should not again proceed until it perceives the approaching head of the advanced guard, when it will recover its former distance at an increased pace. There is no reason to relax any

of these precautions in open country, for great plains, level as they appear, generally contain some undulations which may conceal even a numerous enemy; and such an ambush is always the more dangerous, as it is the least suspected. The only advantage on plains is that a few horsemen at a gallop can soon explore them, without in anywise retarding the progress of the column.

If an enemy is encountered, the extreme advanced guard at once takes its dispositions to receive him. It throws out more skirmishers, and maintains its position, or falls back slowly on the advanced guard. The latter has, meanwhile, sent information to the main column, and if attacked by overwhelming forces, slowly commences its retreat, availing itself of every local advantage to check the progress of the enemy, and give the army time to take its measures. If it be night, the leading detachment must attack without hesitation, and charge the enemy impetuously, whatever be his force, in order to overthrow, intimidate, or at any rate stop him. The darkness is always favorable to him who attacks first, because the enemy, not being able to estimate the opposing forces, must be very guarded in his movements. Thus the advanced guard will have time to come up to the support of the detachment, and be itself supported by the main body. Night marches, however, if not absolutely necessary, are always to be avoided; they greatly fatigue the soldier, and are causes of disorder which the chiefs cannot always repress; moreover, it is during night that cruel mistakes sometimes occur. From the numerous instances where troops have fired on their fellow soldiers in the dark, we may select the following. The French army, divided into two columns, made a night march on Landau, when an enemy's party contrived to slip between both columns, which were separated by a ravine. At a given signal, the enemy fired both ways at once, and then quietly withdrew.

Each column, finding itself suddenly attacked, immediately answered the fire, and both columns remained firing at each other furiously until daybreak.

Halts are made as frequently and as long as may be required to keep the forces united, and to advance with the least possible loss and fatigue. For the main halt the commander of the advanced guard selects the most favorable spot, one well concealed from the enemy, such as the slope of a hill, for instance. He places his sentinels and vedettes near the top, to watch the distant country, while he stations others on the roads by which the enemy can approach. If there is a wood in the neighborhood, he has it searched by his scouts, and leaves a few men in the thickets, where, without being seen, they can observe everything that occurs outside. If an attack is impending, half of the troops remain under arms; while the other half take their repast, to be ready for watching in their turn, when the former are resting. It is hardly necessary to mention that trumpets and drums are not sounded in the vicinity of the enemy; indeed, they are very little used, except in camp, in passing through a city, and on the field of battle.

What must be the strength of the advanced guard and its distance from the main column, are questions which cannot be answered categorically. Its strength and composition vary according to circumstances, and depend mainly upon the resources at the disposal of the general-in-chief. The advanced guard may from time to time be reënforced, when it must meet resistance, or carry and maintain a position. However, it seldom consists of more than one fifth of the entire force of an army, and much oftener it is not so large. If it were necessary to give some rule respecting this, we might state that the strength of the advanced guard, with all its detachments, varies from one fifth to one tenth of that of the entire army. If it were larger, men and horses would become jaded by a hard

service recurring too frequently; on the other hand, if it were too small, both it and the army which it is intended to protect, would be exposed to danger. Being weak, it would not dare to venture a bold and vigorous stroke if occasion offered, and its timidity might even become fatal to the army that follows.

The distance of the advanced guard from the main column increases with the strength of the latter, and depends essentially on its length. As the advanced guard is intended to announce the enemy, and check his progress, it must be far enough ahead to give the main body time to deploy and make all necessary dispositions. For example, if the column were three miles in length, it would take the rear more than an hour to come into line. The advanced guard must, therefore, be at least three miles ahead of the main column, for although its resistance will prevent a rapid progress of the enemy, still there is loss of time in ascertaining the actual state of things, and in sending information. Hence it follows that the minimum distance between the advanced guard and the main column is determined by the length of the column, though generally it is greater.

The rear guard, in its arrangements, very closely resembles the advanced guard; it is weaker, however, because there is less to be feared in the rear than in the front. In forward marches, it forms the escort of the baggage train. It has its extreme rear guard and flankers, which distribute their groups of threes, who must be ever on the watch for an enemy in the rear. Though less cavalry is needed than in the advanced guard, a detachment of this arm is indispensable to check an attack and keep up communication with the main body. The distance between this and the rear guard also depends upon circumstances. In open country it is greater, and in wooded country less, that the main column may always be kept in sight. In an offensive movement it is watchful to prevent hostile detachments from stealthily approaching the rear of the

column to cause disorder and delay by sudden attacks, especially at the passage of a defile. It follows closely enough to prevent its being cut off from the main force, which it at all times must be ready to join if the commander should have occasion to mass all his troops. It carefully shuns all serious engagements that would check the advance of the whole army by forcing it to come to its rescue.

In a retreat the advanced guard becomes the rear guard, and is supplied with the best troops, or with those which have suffered least. It must resort to every measure that can arrest the progress of the enemy ; it adopts particularly the formation in echelons, avails itself of every opportunity to make counter-attacks, and, while retreating, opposes all physical and tactical obstacles likely to hinder pursuit. In mountainous districts, where heights and defiles abound, one of the best dispositions to cover a retreat is that of a series of echelons fronting the enemy, and retiring successively. The echelons nearest the enemy begin the manœuvre under the protection of those behind, by which they retire, to stop again at the extreme rear. The position of each echelon is selected with a view to the advantages which the ground affords for supporting those that are nearest by a vigorous charge, in order to allow them to effect their retrograde movement. If the enemy has cannon, the troops should be very careful to move chiefly along the sides of the road, but in nowise to abandon it, except to avail themselves of all the hollows and irregularities that can afford protection from a direct fire. During the retreat, the rear guard throws out large swarms of skirmishers, who should annoy the enemy in every possible way, threaten his guns, rally to make daring charges, and disperse, to draw him into some ambush, or suddenly expose his columns to the raking fire of some masked piece of artillery.

If the skirmishers are overpowered and forced to fall back,

they should never crowd together, but always scatter. "The Cossack skirmishers," says De Brack, "often close for a charge, but disperse when retreating. Our skirmishers almost invariably do exactly the reverse, whatever may be the facilities offered. The Cossacks are right, and we are wrong. How often have we not seen our troopers, when retiring, rush upon one another in such a manner as to destroy the individual use of their arms, hampering and arresting all progress! And this, by additionally retarding the movements of men not as well mounted as themselves, and keeping them in the rear, has often caused these poor wretches to be cut down or taken prisoners, their backs answering as a shield to their guilty comrades. A too crowded retreat is always put to the sword, for two very simple reasons: the first is that men who are retreating, by crowding excessively together, paralyze their individual means of defence, and render both the halt and the wheel-about impossible; the second is, that the attacking trooper, who has only one object in sight, and who is not at all harassed upon his flanks, hurls himself forward with all his impulsive power, and all his audacity, upon the unresisting mass, which he hacks and hews in perfect security, and can drive before him as far as he chooses. This is not the case in a retreat in which the men scatter as they go. A man who retreats in this fashion preserves all his defensive power; he is equal in all points to the attacking party, who is careful not to rush recklessly upon him, because his own flanks are threatened, his attention distracted, and the danger is equal on both sides. A retreat, conducted in this manner, is never so vigorously pressed nor so far pursued. The slower horses will perform it as well as the swiftest; it distracts the attacking party, stops him just when he might have gained the advantage, and it can wheel round and resume the offensive."

Successfully to conduct the rear guard on a retreat is a very

difficult task. In defiles, the enemy pressing hard, can be kept back only by bold and rapid attacks. Such occasions often lead to the most brilliant exploits, in which officers and soldiers earn great fame by bravery and presence of mind. In order to animate the courage of troops, and give the pursuing enemy a lesson, an army in retreat should occasionally engage in small affairs. In 1813, on the retreat from Görlitz, Blücher was attacked by the advanced guard of the French army. While his rear guard retired, Colonel Dolfs remained with twenty squadrons, covered by Shellendorf. The burning of a windmill was the signal that the enemy was advancing, led by the division of Maison. The Prussians rushed out so quickly from their ambuscade, and took the enemy so much by surprise, that they had no time to form masses. All who did not gain Michelsdorf by a rapid flight, were cut down or made prisoners, and eleven guns were taken. All this was the work of a quarter of an hour. Colonel Dolfs was left dead in the midst of the enemy.

One year later the French, under Marshal Marmont, took a bloody revenge. Blücher had advanced incautiously with the corps of Kleist, four times more numerous than the French, and passed through the village of Vauchamps, which he found unoccupied, when suddenly he was assailed in front and flank by a murderous fire of musketry and artillery. No sooner did he begin to retire, than a body of cavalry, leaving its cover, dashed upon the Prussian columns, whose hasty retreat soon changed into a disastrous flight, leaving four thousand prisoners in the hands of the victorious French.

Ambuscades, though exceedingly dangerous when undetected, are generally harmless if discovered in time. As soon as descried, the leading detachment must rush upon the enemy with resolution and impetuosity, and the surprise which he had prepared for others, thus recoils upon himself. This

method much more frequently succeeds than miscarries. The reason is plain. A concealed enemy usually does not see his adversary's advance, and consequently has no certain knowledge of his strength. If, then, the ambuscade be impetuously assailed at the very moment when it purposed to attack, consternation bewilders it. Besides, in retreat, the soldier easily loses his presence of mind, thinks more of his safety than of his fame, and is apt to believe his own destruction more probable than that of the enemy. Therefore, at night especially, the enemy must be impetuously charged, with no time for consideration. The darkness itself is an additional element of success; for even the most resolute enemy will be astounded to find himself attacked when he had purposed to assail. Thirty horses may throw a whole column into confusion: the head of the enemy's column being intermixed with ours, will increase and extend the disorder. The enemy, confounded, will believe that his intended operation has failed, and give up all as lost.

When the commander of the advanced guard reaches the place where he intends to pass the night, he immediately summons the local authorities and notables, to interrogate them, and obtain all possible information concerning the condition and direction of the roads, the state of the bridges and fords, the extent of the woods, the length of the defiles, the depth of the marshes, &c. What they know of the enemy's projects and position, he will extract more easily by skill than by threats. He should hear them separately, and not trust too implicitly to what they say, especially concerning the resources of the locality, which it is their interest to underrate. On this point he must insist upon full and accurate information. While he is busy with these details, which need no little tact and activity, some of his officers reconnoitre the neighborhood, especially in the direction of the next day's march, and the whole country round is most minutely searched by patrols, which traverse all

the roads, and visit every spot that might conceal an enemy and favor a surprise. The troops do not leave their arms, nor establish themselves in bivouac, until all the patrols have returned, the outposts have been placed, and they are sure that no danger threatens them.

Among the first cares of the commander of an advanced guard, are requisitions for rations, forage, wood, and straw, to be delivered in the bivouac, that the soldiers may be spared the fatigue of going after them. As the advanced guard is generally not very strong, it is important for it to remain together, in view of an attack. When an attack is apprehended, it may be well, sometimes, in order to intimidate the enemy, and give him an exaggerated idea of our strength, to announce the arrival of numerous troops, and make out long requisitions; to divide the forces into several parts, and station them on different roads, as the heads of numerous columns. If, notwithstanding this, the position is deemed unsafe, and a retreat is designed, several fires should be lit and kept burning, and squadrons should occasionally pass in front of them, to represent the successive arrival of reënforcements. Then, when all the requisitions have been brought in, and no one is further admitted, silently operate a retreat, and take up a better position in the rear, without the knowledge of the enemy. Beware of spies, however, lest they discover the trick.

When an army is on its march, the troops should remain together, and the nearer they are to the enemy, the more strictly must this rule be enforced. Under such circumstances, it is impossible to give them the comforts which they enjoy in garrison, cantonments, or even in camp; bivouacs are then the only mode resorted to, to enable the men to refresh and rest themselves. The subject of bivouacs is one of vital importance to the preservation of both men and horses, and demands the most scrupulous attention of the commander. Some officers

have been known to ruin half the horses of a regiment, because they knew not how to choose their ground. "Of two leaders otherwise equal in merit," says De Brack, "but the one skilful, the other very unskilful in the selection of bivouacs, the former at the end of a campaign will be able to show a numerous and well-mounted cavalry, while the other will have only a few half-starved horses." And so it is with the men. Fatigue destroys and demoralizes an army more rapidly than battles do; therefore, all that can lighten the extra labors required to feed men and horses, and facilitate their temporary encampment, all that can diminish the toils and increase the security of the troops, will constitute the essential qualities of a well-selected bivouac.

Water is of first importance; it must be good, abundant, and near at hand. After water come provisions and forage. Care must next be taken that fuel is convenient and plentiful, especially if the weather be inclement. In warm and dry weather, only the quantity necessary for the preparation of food need be gathered. A soil dry and sloping, which cannot suddenly be inundated, and which does not become muddy after a storm, should be sought for. If the season is inclement or damp, facilities for obtaining a quick and comfortable shelter, as well as for procuring fuel in abundance, will be of vast importance. Positions, which the enemy can reach without obstacles, and which we cannot leave with sufficient rapidity, must be avoided: those should be preferred that command the neighborhood, screened from observation, but overlooking all the surrounding country. It is better to lengthen the march for the sake of these advantages, than to halt early in an unfavorable position.

As soon as a troop knows the site allotted to it, it establishes itself there. The infantry pile up muskets and prepare shelter. The cavalry fasten their horses, and adjust their arms, each in the rear of his own horse, that they may not be broken,

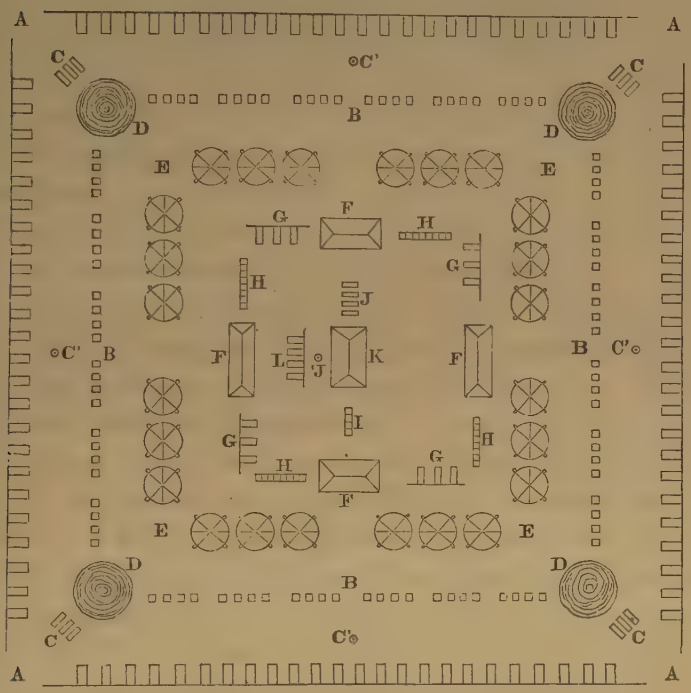
should the animal roll. After unsaddling, the harness should be placed close at hand, that in case of a night alarm, there may be no confusion from a careless or irregular arrangement. In order to have time for the necessary dispositions, the troops should reach their halting place while it is yet day; this rule should not be violated, except after an engagement, or under peculiar and urgent circumstances. Man and beast suffer when a camp is occupied at night. No one knows his whereabout; the men are worn out with fatigue, they wander in search of food, wood, and water, and only begin to cook when they should be at rest. They are thus disqualified from meeting the fatigues of the morrow. The horses also are not fed till late at night, which injures them more than long marches do.

It is generally recommended to bivouac in line, but many accidents of ground and other circumstances may render a different formation, that of a square, for instance, more advantageous. The following diagram represents the disposition of a squadron in bivouac, as practised by the French in Algeria; and the same arrangement would answer for four or more squadrons as well as for four platoons. Each side of the square is formed by a platoon. A represents the horses at the picket rope; B, the saddles and bridles; C, stable guard; C′, stable guard on watch; D, forage per platoon; E, stacks of arms; F, officers' tents; G, officers' horses; H, kitchens per platoon; I, officers' kitchen; J, police guard; J′, sentry in front of the captain's tent; K, captain's tent; L, captain's horses. The men sleep with their heads on their saddles, or under the stacks of arms, over which they hang a cloak. Thus they form a description of tent, under which four men, closely packed together, contrive to find shelter for at least the half of their bodies, the other half being wrapped in their cloaks.

The name of camp is often given to any arrangement of troops when halting, whether in tents, huts, bivouacs, or other-

wise. The term, however, signifies a more permanent arrangement than bivouacs, which are used only in cases of necessity. The object of camps is to put many men into a small compass,

Fig. 24.




to give them rest and as much comfort as possible, and to dispose them in such a manner that they can get under arms without loss of time. To attain this, the tents are systematically placed. Thus no room is lost; the men can attend to their duties without confusion, and easily find their way about the camp. Camps ought to be on the highest grounds, or in front of them, with ample room and open view; with flanks protected by natural obstacles, with easy communication from flank to flank, and front to rear, and with wood and water in the neighborhood. The troops should be encamped, as far as

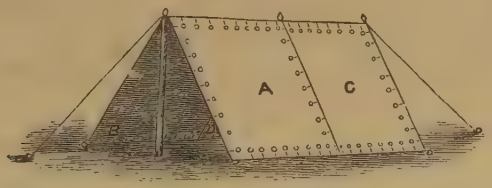
practicable, in order of battle, so that they can easily move into position. Camps which are to last many years, such as the camp of Boulogne, are intrenched and laid out with the nicest regularity; the men then lodge in barracks. Camps of instruction, such as that of Chalons, display the utmost science and skill in castrametation; being intended for several months' use, the men are comfortably lodged in large tents. With the exception of such permanent arrangements, tents are now seldom used for encampments; they have long since been discontinued in time of war, because they retard the movements of an army in the field, and because, in any cultivated country, shelter can be generally found, or materials procured for the construction of huts, which are by far the best kind of cover.

"Tents," says Napoleon, "are not wholesome. It is better for the soldier to bivouac, because he can sleep with his feet toward the fire; he may shelter himself from the wind with a few boards and a little straw. The ground upon which he lies will be rapidly dried in the vicinity of the fire. Tents are necessary for the superior officers, who have occasion to read and consult maps, and who ought to be ordered never to sleep in a house—a fatal abuse, which has given rise to so many disasters. All the European nations have so far followed the example of the French as to discard their tents; and if they be still used in camps of mere parade, it is because they are economical, sparing woods, thatched roofs, and villages. The shade of a tree against the heat of the sun, and any sorry shelter whatever against the rain, are preferable to tents. The carriage of the tents for each battalion would load five horses, who would be much better employed in carrying provisions. Tents are a subject of observation for the enemy's spies and officers of the staff; they give them an insight into your numbers, and the position that you occupy; and this inconvenience occurs every day, and every instant of the day. An army, ranged in

two or three lines of bivouac, is only to be perceived at a distance by the smoke, which the enemy may mistake for the vapor of the atmosphere. It is impossible to count the number of fires; it is easy, however, to count the number of tents, and to trace out the position that they occupy."

Since Napoleon's time the French have invented what is called "the shelter tent," which requires no additional means of transportation, and is now generally used on the march and in provisional encampments; indeed, in the Crimea, the mass of the French troops had no other shelter. It originated among the soldiers in Algeria, who joined two camp sacks together, and kept them stretched over a pole by means of small stakes driven into the ground. It now forms a regular part of the men's equipment, and in its improved form consists of square pieces of cotton cloth made waterproof, with buttons on one edge, and button holes on the edge corresponding. Each soldier has a square of this cloth, which adds but little to the weight which he or his horse has to carry. Buttoned together and supported by sticks or, for want of them, by muskets, they form a tent which can be raised and struck in a moment. Usually three men unite to form one tent; the third man arranging his piece of cloth at the end that is most exposed to the weather. When five men unite to form a shelter, it is

Fig. 25.

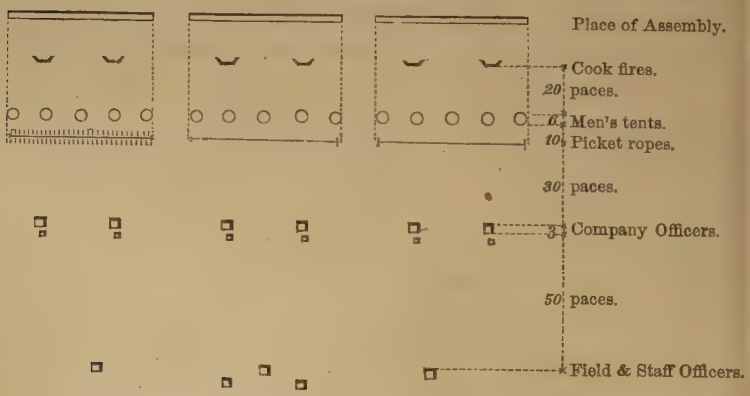



made double the length, as in Figure 25, in which the squares A and B, C and D, are buttoned together and thrown over the cord, after which A is buttoned to C, and B to D. The fifth square can then be thrown over either of the slanting cords,

and buttoned to A and B, or to C and D. The sides of the tent are, of course, pegged to the ground.

Though often necessary, it is not always possible to intrench a camp so as to secure it from the enemy, because generally there is not time enough to cover the approaches with regular works. In such cases the roads and approaches are barricaded and made difficult of access; and these precautions should never be omitted, for they are the only means of holding the enemy at bay till the troops get under arms. Camps are always laid out according to prescribed rules, which, though varying with different nations, are based on the same principles of order and regularity. The degree of precision with which this is effected, necessarily depends on the amount of time; but, in all camps and bivouacs, regularity, though not always attainable, should be always aimed at. The following diagram represents a cavalry camp of three squadrons, as laid down in Cook's Cavalry Tactics.

Fig. 26.




Cantonments are large tracts of country, where the troops are quartered through the villages, among the inhabitants, or lodged in huts. Cantonments are resorted to, first, on the outbreak of a war, when the army collects together, waiting for the

commencement of operations; secondly, during the operations, in case of an armistice, or interruption of hostilities, on account of the severity of the season; thirdly, after the conclusion of peace, when a temporary occupation of the enemy's territory is stipulated, or for other similar reasons. According to circumstances, cantonments are confined to a narrow space, or spread out over a large extent of country.

When a country is rich in resources, or when an attack is feared, or an operation contemplated which requires promptness and rapidity of execution, the troops are collected in a narrower circle, and a single house is often made to lodge a whole company. If, on the other hand, the country is poor, and no immediate attack is apprehended, or when there is no intention of resuming hostilities, the troops are widely distributed, yet so as to allow a corps d'armée to be concentrated in twenty-four hours, which implies a front of from twenty to thirty miles, on about an equal depth. The troops are then disposed in three lines, the cavalry always remaining in the third, excepting those required to do outpost service. The first line guards itself always very nearly as in camp. But, whatever line they occupy, the cavalry always sleep with their horses, and, when near the enemy, with open doors, or better still with the doors lifted from the hinges, that they may not be treacherously locked in. At the close of the inclement season, the first line generally goes into camp again, and, if hostilities are impending, the other lines also. Cavalry and artillery, however, are left under shelter as long as possible, to favor the horses.

As an army on its march is protected by scouts and flankers, so, when at rest, it is guarded and protected by outposts. Like the former, these must watch over the safety of the main body, see that no one approaches unperceived, and, should the enemy make an advance, must arrest his progress until the troops are under arms and prepared to receive him. The

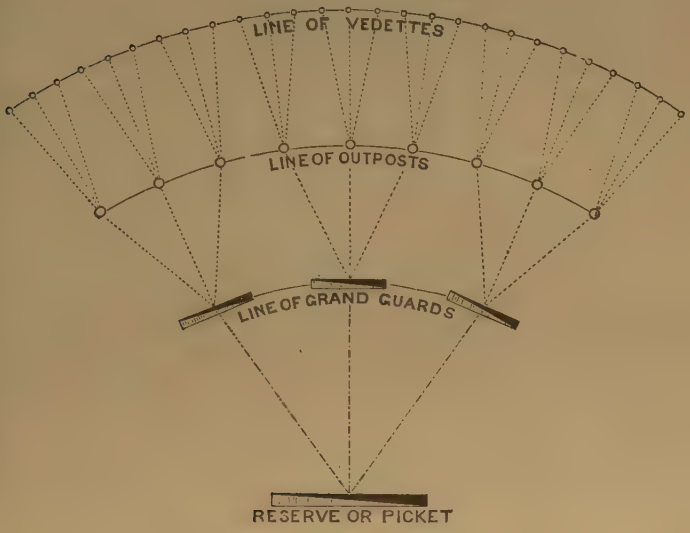
necessity of this arrangement is obvious. Men cannot stand ready day and night to repel an attack; they and their horses must have repose, and their wants be satisfied, that they may fulfil their duties properly. For this reason every position, whether bivouac, camp, or cantonment, taken up either for a long time, for a day only, or even for a few hours, is surrounded by a chain of guards to protect it from surprise, and to give rest and security to the occupants.

When troops encamp for some length of time, in addition to the ordinary measures of security invariably taken, they strengthen their outposts by abatis, redoubts, &c., and command the roads that lead to them, by fortifying farmhouses, barricading villages, bridges, and defiles, and in other ways rendering all possible approaches to the camp both difficult and dangerous. Outposts must be so disposed that every movement of the enemy may be immediately detected; that nothing can pass unobserved between them into camp; and that they can hold their ground against an enemy long enough to protect their troops from surprise. For this reason the men on outpost duty are arranged according to the parts they have to act, namely, those who watch the enemy, and those who endeavor to stop him in case of an attack. The first, called vedettes when mounted, are pushed on to a post whence they can overlook all the roads leading from the enemy's side; they are supported by outposts, and these by the grand guards, which in their turn are supported by the reserve or pickets. Some of these denominations are not always employed in the same sense. The English, for instance, still use the terms "outlying" and "inlying pickets," which, in this country, are entirely obsolete; the French terms, as illustrated in the following diagram, having been generally adopted.

Troops for outpost duty are selected according to the nature of the ground. With an army they are generally composed of

light troops of all arms, horse artillery, light cavalry, and light infantry. In an intersected country, the infantry is chiefly used; in an open country, the cavalry. In both, the cavalry fur-

Fig. 27.




nishes patrols for the front and flanks, and generally occupies the high roads. The cavalry pushes vedettes forward beyond the infantry chain, as they can gallop back, whereas infantry soldiers might be cut off and be made prisoners. How widely the chain of outposts should extend, depends upon the strength of the army, and the nature and extent of the locality. In some cases it may be so easy to pass around or turn detachments composed of regiments, brigades, and even divisions, and attack them in the rear, that it becomes necessary to extend the chain of outposts all round the camp. In countries where the people were unfriendly, frequently whole armies have been thus attacked in the rear; they should, therefore, always take such dispositions as enable them to concentrate their forces in a favorable place in front, in rear, or on either flank, according

to circumstances. When the rear is protected by natural obstacles, the chain of outposts need extend only to the flanks; when these are open, they must be protected by strong pickets, and parties of cavalry must be sent out constantly to scour the country on both sides.

The distance of the outposts is also entirely dependent on the strength of the main body and the peculiarities of the ground. The weaker the main body, the less strong are its outposts, and consequently they are nearer to the camp; otherwise both grand guards and pickets might be destroyed before they could be supported or effect their retreat. The main body, on the other hand, cannot be in comfortable security, unless it has time to be apprized of danger and prepared to meet it. An encamped force requires, according to its numerical strength, from ten to thirty minutes to take up arms, mount on horseback, and be ready to accept or decline battle. If it must be forewarned ten or twenty minutes in advance, we may also admit that the officers of the grand guards will need equal time to ascertain thoroughly the intentions of the enemy, and transmit their information; these guards must, therefore, be placed at from twenty to sixty minutes, that is, from one to three miles from the centre of the corps they have to cover. On a plain this distance will be increased, while on uneven ground it may be diminished, since the enemy can be stopped by positions, obstacles, ambushes, &c., &c., which compel him to be cautious.

With small bodies of troops, the number detached for outpost duty varies from one fourth to one sixth of their strength; with large bodies, from an eighth to a tenth. The porportion, however, differs in different nations; among the Russians it is largest, among the French, least. The nature of the country in which the army is operating must greatly affect the number of men employed. In open country where the prospect is un-

broken, few vedettes will suffice; in intersected country, where gardens, thickets, rows of trees, heights, and other obstructions interrupt the view, both vedettes and outposts must be placed close together, and are therefore more numerous. Cavalry, forming a chain of outposts in an enemy's country, can place vedettes by day at from six hundred to one thousand paces apart, for they can see each other at that distance, and also hear a shot. All this, however, depends so much on circumstances, that no positive rules can be laid down; but, as the paramount service of vedettes is to watch the advance of an enemy, they should be so posted as to give the widest scope to their observations that the nature of the ground will admit of.

Double vedettes are considered the best, for two see more and better than one; besides, this arrangement has the advantage of allowing one man to bring in the report of any occurrence without loss of time. Under some circumstances, and when they are placed far apart, their service is at times so arranged, that one of them, say No. 1, moves slowly to the vedette on his right, learns whether anything has occurred, and returns, whereupon No. 2 proceeds, in like manner, to the vedette on his left and back again, and so on all along the line, which arrangement secures the advantage of continuous patrols throughout the whole chain of vedettes, leaving nothing unnoticed between them.

In order to spare men and horses, there ought to be no unnecessary vedettes, and to avoid the constant travel to and fro of one of them to give information, a set of signs is generally agreed upon, which notifies the commander of the outposts of the main occurrences likely to take place. Thus, when a vedette discovers something on the side of the enemy, he moves his horse in a circle at a walk. The commander of the post at once rides out to ascertain what it is, and sends information to the officer of the grand guard. If vedettes see troops marching

toward them, but yet far off, they ride in a circle at a trot. If the enemy's troops are advancing rapidly, and at no great distance, a mile for instance, then the vedettes move round at a gallop, and both post and grand guard mount and advance. If the enemy is so near as to drive in the vedettes, they fire to give the alarm. When driven in, the vedettes must not return directly to their post, but a hundred yards or so to the right or left of it, that the posts and guards may not be surprised, but on the contrary have a chance to attack the enemy's flank or rear. All strangers and deserters must halt, lay down their arms, and advance singly to the vedettes. When many approach together, the outpost assuredly will be already on the spot, prepared to meet them.

At night, or in foggy weather, vedettes are withdrawn from the heights, placed closer together, and stationed on the roads, behind fords, bridges, and ravines. However, they should not be posted near rushing water, mills, or where there is noise; for by night they must depend upon their hearing more than upon their sight. If anything awakens suspicion, one vedette rides in and reports it. Every one, whether deserter or not, is forbidden to approach very close at night, and, if on horseback, is ordered to dismount and wait till the relief or patrol comes round. When the enemy is about, part of the post and grand guard remain on their horses, and are pushed forward to give the others time to mount in case of an attack.

Patrols are sent out from the grand guards to communicate with those on the flanks and with the outposts, and at irregular hours between reliefs, to visit the vedettes, and scout the country along the front and flanks. Before dawn they move to the front, and on the highest ground await daylight, and watch for signs of the enemy. Patrols should not be large; three or four men are quite enough; and, if these are active and intelligent, they will serve the purpose better than vedettes. Indeed, in

many cases, when there is plenty of infantry, the latter may perform the stationary duties of sentries, and cavalry be employed for numerous patrols. Again, when there is not a sufficient number of men to overlook the country thoroughly by means of sentries and vedettes, the deficiency can be supplied only by employing patrols, who constantly cross each other in all directions.

Patrols should move very noiselessly. Their scabbards should be placed between the leg and the saddle, that they may not strike against the spurs or stirrups; and the rest of the equipment should be so arranged as to prevent the metal parts from rattling against each other. The horses must move where the roads are soft, that their steps may not be heard. In Portugal, French patrols wrapped their horses' feet in sheepskins, and in that way marched over stony roads, near the English vedettes, without being heard. By day, the men steal along the hedges, walls, fences, shrubs, hollow ways, ravines, &c., disappear in the woods, and peep through the glades. At night they avail themselves of every irregularity, remain on low ground, and avoid hills, lest their forms be seen standing out in relief against the sky. They often stop to listen, and occasionally alight to hearken with their ear on the ground, whether any enemy be advancing. Smoking and conversation are absolutely forbidden.

If the enemy is met, the patrol should neither fire nor show himself; but he should scan him carefully, count his numbers, and endeavor to find out his intentions. In general, patrols have not to fight, and therefore, if they can fulfil their duty without coming to an encounter, they should avoid any engagement either on the offensive or the defensive. If they are detected and cut off, there is no longer reason for concealment, and they must only rush impetuously through the enemy that turned them. To avoid this, the men should not march

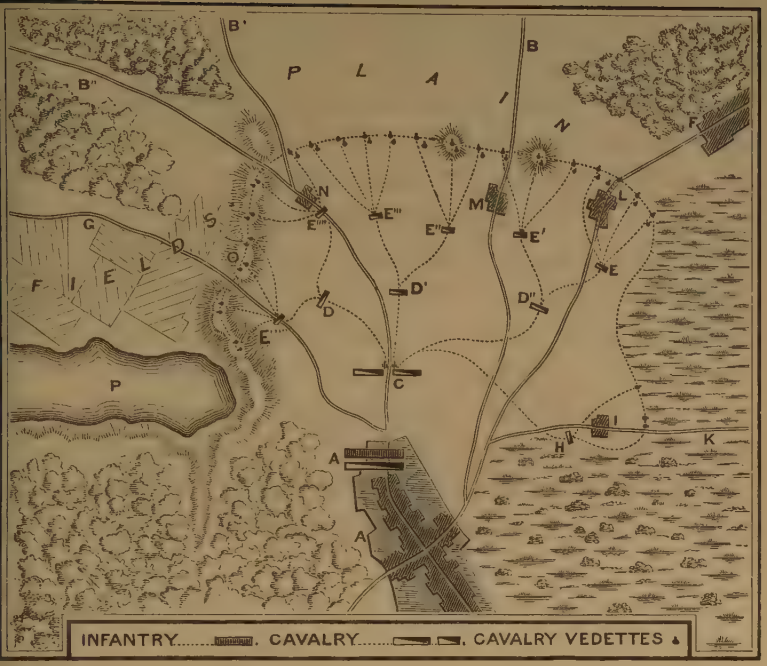
together, but at a little distance from each other; they can thus more easily make their observations, and lend each other mutual protection. Sometimes patrols of only one or two men are sent out to a great distance, there to remain for several hours. Notwithstanding all vigilance, a man may be surprised, especially in wooded and broken country. Let him, therefore, note every sign that indicates the proximity of an enemy. If his horse pricks his ears, he should redouble his watchfulness; and if he shows fear, he should seek the cause of it, before he urges him on; for when his own senses fail, he may often trust to the instinct of his beast.

When a patrol's business is simply to ascertain if the outposts are vigilant, if orders are well executed, and if every one performs his duty, they are called rounds. The commander of the principal corps despatches some officers to the front, who return with an account of what is going on; the chief of a grand guard inspects or causes to be inspected his outposts, sentries, and vedettes; the chief of an outpost visits or causes to be visited his sentries or vedettes—all this is done by rounds. The man whose duty it is to go the rounds is alone or accompanied by one or more men, according to his rank, and the nature and extent of the ground to be inspected. Though his mission is to exercise a special supervision, he also notes everything around him, particularly in the direction of the enemy. Rounds, for their safety, take the same precautions as patrols.

All these details will now be more perfectly understood, by applying them to the following maps, the original sketch of which is taken from McClellan's Report, and which fully illustrate all we have said concerning the service of outposts.

The first example (see Figure 28) supposes an advanced guard, consisting of a brigade of cavalry and a division of infantry, to be in the village A, and that it is necessary to guard it against the enemy, expected by the roads B, B′, B″.

Fig. 28.




To determine what line of observation should be occupied by the outposts, all the ground between the position of the advanced guard, A, and the points accessible by the enemy must first be carefully examined on the map. From the selection of the line of observation, results the composition of the chain and its supports. In this example, according to the conditions above mentioned, the most advantageous line of observation is that proceeding from the village L through the villages M and N, thence following the ridge O to the lake P. This line is favorable, because, first, the right flank, resting on the marsh near the village L, cannot be turned, and therefore requires no further extension; secondly, the left flank, resting on the lake, allows us to observe from the ridge the distant movements of the enemy, whilst it conceals our own move-

ments from the enemy in that direction; thirdly, without being too far off, the chain is at such a distance, that every movement of the enemy can be discerned in season to enable the advanced guard to take all its measures for operating against him. From the character of the ground toward the enemy and before the advanced guard, it is evident that cavalry can be employed to advantage; therefore all outposts are of that arm only. Ten companies and two pieces of horse artillery are detailed for this duty. C is the reserve, consisting of four companies and two guns. D, D′, D″ are the grand guard, consisting of one company each. E, E′, E″, E‴, E⁗, E⁗′ are the outposts. H is an independent post of one platoon, observing the road K. Patrols are sent from the village L through and around F, and from E⁗′ along the road G, and from the other posts in the direction in which the enemy is expected.

In the next example (see Figure 29), the advanced guard, A, consisting of a brigade of cavalry and a division of infantry, is supposed to be placed behind the village B, and that outposts are to be stationed to guard against the enemy's attack from the direction of the village C. Under these circumstances it is best to extend the outposts beyond the stream M, for if the line of posts were limited by that stream, it would be difficult to obtain information of the enemy's movements. The best line of observation, therefore, is from the lake N to the corner of the village B, then along the edge of the village to the marsh Q. The open ground, from the lake to the village, may be held by cavalry; that along the edge of the village by infantry. To prevent the line being turned, independent posts must be stationed on the left flank, near the lake N, and the height O, and on the right flank, on the road L. To support the outposts and defend the villages B, G, I, R, it is also best that all the grand guards should be of infantry. For this purpose,

Fig. 29.

four companies of cavalry, two regiments of infantry, and two pieces of artillery are detailed to furnish the outposts, grand guards, and reserve. D is the reserve, consisting of one company and a half of cavalry, eleven companies of infantry, and two pieces of cannon. E is a grand guard of three companies of infantry, which furnishes the two posts F, F′, each of which posts five pairs of sentinels. E′ is an infantry grand guard of two companies, which supports the two cavalry outposts H, H′, each of which consists of a platoon, and posts three pairs of vedettes. E″ is another infantry grand guard of two companies, which is to support the cavalry outpost H″, which posts four pairs of vedettes, and H‴, which posts one pair. E‴ is an infantry grand guard of two companies, which holds the ceme-

tery and supports the cavalry outposts II'''', posting three pairs of vedettes. Patrols are constantly sent out in all directions.

An encampment cannot be accounted safely guarded unless a watch is kept for a considerable distance around it, and maintained so effectively that the enemy cannot slip unseen through the chain of the outposts. A mistake, often made by the chief of a detachment designed to guard a numerous body at a great distance, consists in taking the precautions necessary to avoid a surprise to himself, but leaving behind him a wide space in which a hostile party can form an ambush, or fall on the rear guard at the moment when, attacked in front by superior forces, he fancies he can easily retreat upon the main body. The guard is thus carried off, leaving the entire ground it was intended to occupy unguarded. To avoid this danger, Marshal Bugeaud recommends a system of outpost service differing from that generally in use, since it withdraws the vedettes and sentries at night, and substitutes small independent squads posted on all avenues of approach in front, flank, and rear, and previously instructed in concerted signals. These signals are made by petards of one or two pounds of powder for localities and atmospheric conditions in which an ordinary musket shot could not be heard. All posts should be instructed in the meaning of the different reports, conveying signals few in number to avoid confusion. Thus, the firing of one petard at any post would indicate the approach of an enemy in that direction; two, fired in the village, the rallying there; three, the rallying in the rear on the place of assembly; and so on.

The principle on which the system is based is, that the position of a detached corps is always taken as a centre of movements by the enemy who meditates a surprise. This, therefore, is the dangerous point, which it is important to leave as soon as the enemy's approach is signalled. To assure his retreat, the chief of a detachment that is to establish itself for

many days should, therefore, on arriving in position, without loss of time, and without waiting to take rest, at once reconnoitre the surrounding country within a radius of three to six miles. He should take with him the officers who are on duty the following night, some mounted men, and a few intelligent inhabitants, and make every inquiry about the roads and pathways, as well as the general features of the ground several miles around, especially concerning all avenues leading to his rear, and write down what he thinks important. This reconnoissance finished, he will imagine himself in the enemy's place, and consider what circuits the enemy would be likely to make to envelop his position without the danger of encountering any of the customary outposts. This, Marshal Bugeaud calls the "supposed circle," and on this, or beyond it, he places his squads of observation, drawn from the posts occupied during the day, and which he leaves as they are under the present system. These squads are never allowed any fire, and their places should be constantly varied, now on the right, now on the left of the road, sometimes backward, sometimes forward, to render it impossible for the enemy to learn their position, while this very moving and shifting about is calculated to keep them all the more active and on the alert.

Naturally so radical a change has encountered great opposition, especially from old officers, who find it easier to adhere to the instructions of their youth than to investigate the merits of proposed improvements. "Most officers," says the Marshal, "to whom I spoke for the first time about my system, exclaimed that posts so far removed would certainly be carried off. For those whom I could not convince by reasoning, I arranged the following device. A few days after our discussion I sent for them separately, and told each one that every night the enemy had a post in or near such a forest; that I had resolved to carry it off, and that I had decided to intrust

him with the execution of my project. At once the officer's countenance showed embarrassment, and the reply generally was: 'But, sir, in order that I may carry off that post, I ought to know something about its real position; can you not give me some information, or better still, is there no one here from the country, who has seen it?' 'Ah, sir, you, who found it so easy the other day to carry off the squads on my supposed circle, how is it that you are embarrassed now?' He then acknowledged his error, which, unfortunately, is too common."

Posts are considered in peril whenever they cannot be promptly supported; but in a judicious system this is not necessary, unless it be of moment to hold the position which they occupy, and then they are posts of occupation, and not merely of observation—a difference carefully to be distinguished. In the accompanying plan, Figure 30, the village X is occupied by two battalions detached three leagues distant from the army. On arriving at this point, the chief of the detachment established the usual chain marked by the inner circle, which is about eight hundred yards in diameter, or two thousand four hundred yards in circumference. Having reconnoitred the surrounding country, he concludes that the most natural movement of the enemy to envelop him would be by the outer circle marked ——-——-——-——-——, and that it would be best to station his night posts near the points H, I, L, N, J, P, Q, R, G. Suppose the enemy to be signalled at I, H, G; the chief of the detachment immediately announces by the number of reports that he is going to occupy the place of assembly in the rear of O, and that the posts are to join him there, which they do by roundabout ways. Having reunited his men, he may, according to circumstances, await daylight or continue his retreat. The system certainly seems correct, and, coming from as distinguished a chief as Marshal Bugeaud, is well deserving attention.

Fig. 30.

Old chain used.
Posts placed on this chain.
Supposed circle.
Line of retreat of the different posts.
Night posts upon the supposed circle.
Troops marching against the two Battalions posted in Village X.
Explosion of a Petard, announcing the presence of the Enemy, and directing a retreat upon the Place of Assembly.
Battalions in retreat upon the Place of Assembly.
SUPPOSED CIRCLE
OLD CHAIN USED IN THE NEW SYSTEM
PRESERVED
SUPPOSED CIRCLE
FORCED RETREAT
FORCED RETREAT
NATURAL LINE OF RETREAT
VILLAGE
occupied by 2 Battalions, and 3 leagues distant from the Army.
PLACE OF ASSEMBLY

The service of outposts is of such high importance, and requires such concentration and such an intimate connection between all its various parts, that it is necessary to place it under the direction of one man alone. Every chief of a corps may be intrusted with establishing provisionally the detachment destined to watch for the safety of the corps under his immediate command; but a general rectification will always be necessary to effect a perfect harmony between all the particular dispositions taken for the divisions, brigades, regiments, &c. Generally a field or staff officer is charged with this duty: to him all reports are made, and from him all orders proceed.

Very often it happens, and it is a great fault, that outposts see double, and mistake five hundred men for a thousand. A small brigade of cavalry, with a few field pieces, dimly descried at a distance, by an unpractised eye, often swells into a column of ten thousand men in march. An officer who has thus blundered several times is not to be depended on. Danger must not appear greater than it is, and good sense should increase in proportion to danger. A too vivid imagination not only multiplies objects, but sometimes transforms inanimate into animate beings, converting rocks, felled trees, and bushes into armed men, and creating most wonderful optical illusions. The author of a lively volume, entitled "Sketches of Campaigning Life," thus describes an amusing incident of this kind, of which he appears to have been an eyewitness:

"One dark, windy night, I was on advanced picket not far from the large central fort; the French sentries, after dark, were pushed to within some fifty yards of ours; the orders were not to fire unless the enemy made a movement in advance; we habitually found them equally civil, and a tacit understanding seemed to exist that we should not shoot one another unless absolutely necessary. An hour before daylight the general of the brigade visited my picket; it was a hazy

morning, and daylight broke slowly; a fog hung in the dells, and over the undulating ground in our front; there was an upright rock at some little distance in advance of the picket, which looked, in the uncertain light, like a French vedette with his long drab cloak; the general fell into the mistake, and, thinking the presumed vedette had advanced too near, ordered me to fire. Knowing thoroughly the ground in my front, I ventured to assure him of his error, at which insinuation he was pleased to be angry, and peremptorily ordered me to obey. Of course my compliance was immediate; but the echo of my sentry's shot came back as flat a denial of the presence of the enemy as the sound of a bullet against a rock could well venture to express in contradiction to a brigadier. At this moment Lord Wellington rode up; he asked what had occasioned the firing; the brigadier had an awkward excuse to make and to avow his incorrectness of vision. Lord Wellington, turning sharply round, asked him how old he was; the brigadier replied, forty-four! 'Ah!' said Lord Wellington, 'you will be a great soldier by the time you are as old as I am!' The future duke, at that time, was only forty-one."

To alarm the army unnecessarily is a crime that cannot be expiated. The true mean between precaution and confidence is more difficult to describe than to feel. To him who cannot feel this mean, it cannot be explained. The long-established rule for vedettes, to fire, even by day, upon every one that approaches and does not give the parole, evidently requires at least this limitation, that when a vedette clearly recognizes, in the person approaching, one of his own officers, he must not fire, even should the officer be unfortunate enough to have forgotten the parole. Indiscriminate firing upon every single man by day, should not be permitted; and it is sheer absurdity for a vedette to ride up to every poor, helpless countryman, with an air announcing that his hour of doom has come

In order to know what happens at all points within a long radius, recourse is had to reconnoitring, or to strong patrols, drawn from the principal corps. These go beyond the outposts, and proceed far enough to obtain intelligence of the enemy, or of the neighboring corps. These patrols are under the special order of the commander of the forces, who decides whenever any are to be employed. It is particularly when the enemy is in cantonments or at rest, that reconnoissances are sent out. On the march they observe the same precautions as detachments in general, that is, they detach scouts and flankers in front, flanks, and rear. The main body keeps in the centre of these skirmishers, which are immediately supported by small reserves, if the force at disposal permits it. If a reconnoitring party needs to pass the chain of the hostile outposts, it vigorously attacks some well-selected point, drives away the sentries and vedettes, makes some prisoners, skirmishes a few minutes, during which an officer or non-commissioned officer, well mounted, ventures forward to see what is to be reconnoitred, and then the party retires.

Like patrols, reconnoitring parties must seldom fight, and then only for the purpose of opening a passage in the route they are obliged to follow. The object of the reconnoissance is to gain information. Certainly, daring and intrepidity are among the first requisites in the commanding officer; but if, in the hope of surprising some post, carrying off some convoy, or destroying some ill-guarded troops, he quits his route and loses time, he violates his duty, and is blamable, even though success attend his enterprise. However, if he have received discretionary orders on this head, he may, after having first made himself perfectly acquainted with the dispositions of the enemy, throw confusion into their cantonments, when he can do so without risk, and even capture prisoners.

A splendid instance of such a reconnoissance is thus related

by General De Brack: "In 1809, Captain Curély, aide-de-camp to General Colbert, was ordered to reconnoitre the march of the Austrian army, at that time retiring before the army of Italy. At the head of one hundred men, he proceeded ten leagues in advance of the division to which he belonged, turned the flank of the Austrians, and crept so secretly along their rear, that at the close of the day he found himself in a wood about three quarters of a league from a village in which were the headquarters of the Archduke Charles. A wide, sandy plain separated him from this place. Two or three Hungarian stragglers whom he fell in with, gave him some useful information. A large drove of cattle was returning from the fields toward the village, and passed near his ambuscade. The captain seized upon the drivers, and secured the cattle in the wood until nightfall, when, resuming his march, and distributing among the oxen his chasseurs, on foot and leading their horses, he advanced upon the village under cover of the cloud of dust they raised. The darkness, the dust, the fatigue of the enemy, together with the little precaution taken by the Austrians on the side from which the cattle were approaching, so well assisted Curély, that he made his way as far as the principal street, where with his own hand he blew out the brains of one of the sentries at the quarters of the Archduke commanding-in-chief. At this signal, his chasseurs leaped on their horses, laid about them for some minutes with their sabres, and taking advantage of the helpless astonishment of the enemy, quitted the place, and rejoined General Colbert's brigade in the morning, without having lost a single man or horse."

The officer conducting a reconnoissance should possess every military qualification. Being thrown entirely upon his own abilities, he should find within himself resources proportioned to his situation. On this service it is not sufficient merely to observe; he must observe minutely, so that he may

not give false information to troops whose movements are regulated by his reports. The failure of a reconnoissance is a terrible misfortune for the officer intrusted with it; which, moreover, will be greatly aggravated by the reflection that he not only sacrifices those under his immediate orders, but that he also endangers the safety of the brigade, division, or corps d'armée which he may have been employed to assist and protect.

The first care of an officer in command of a reconnoissance is to calculate the physical strength of his detachment; to watch over it, and take timely opportunities of refreshing it, so that he may preserve it, as far as possible, unimpaired. The powers of his horse are the horseman's main chance; if they be exhausted rapidly, he has nothing left to depend upon. A reconnoitring party, having a long distance to travel, and its time not positively limited, must, therefore, accurately estimate its powers of endurance, comparing and adapting them to the exigencies of the duty, and never expend more than is actually necessary.

Reconnoissances should move, as much as possible, unobserved, and consequently in exposed situations they should march rapidly, whereas they may move more leisurely while under cover. They have always to fear betrayal by the country people, and therefore ought to avoid all such villages and places as they are not required to examine. For this reason they should be supplied with provisions and forage, making their halts in detached, concealed spots, from which they can keep a good lookout. When obliged to enter a village, they should feel their way first, stationing movable vedettes on the outskirts, to prevent the escape of any persons, who might give notice to the enemy. If the village be in an open plain, a sentry should be placed in the church tower, and, at all events, the detachment should remain at a place only long enough to

make the necessary observations, procure guides, forage, provisions, and what else they may be in need of.

With respect to the topographical part of this service, the following are the chief points to be noted by the officer in command, in surveying the features of a country. Of woods, he will give their description, their extent, and the nature of the soil in which they grow; he will state whether they are very thick, the manner in which they are situated relatively to the road by which they have been approached; whether there are villages close to them; whether they be intersected by many roads or tracks, and in what direction these lead. Of hills, he will likewise mention the characteristics; whether they are wooded or otherwise; stony, grass land, or rocky. He will state whether they command the road, and on which side; if their acclivity is gradual or abrupt; if the road leading to them ascends at once or winds along their face; whether the summit is flat, wooded, and of what extent; whether on the opposite side the descent is very steep; and if they be commanded by any loftier eminences. Of rivers and streams, he must give their width and their course with respect to the roads; the nature of their banks, and which of them is the higher; if the river is shut in by rocks; if it flows across meadow land, and whether these meadows are passable at all times, or only at particular seasons of the year, during frost or severe drought; what bridges or fords there may be within a distance of two or three miles to the right and left, with the names of those villages or localities at which they are found, and whether they are practicable for artillery. Of plains, he will mention the extent, and the number of villages which can be distinguished upon them at once. He will describe the nature of the soil, and also state whether there are only cultivated fields, or likewise meadows, ponds, and running streams, and whether the ground is much intersected by deep ditches.

Of roads, he will be careful to mention the nature, condition, and width; whether they are straight or winding; and enter into full details about the character of the country on either side within range of cannon, and whether, when closed up between high banks, they do not become gorges or hollow ways. Of towns, he will describe the situation and surrounding localities, especially the roads centring in them; he will also state whether they are fortified, or to what extent defensible as military posts. The same with villages and hamlets, and, besides, the arrangement of their houses; whether divided by gardens, and if such gardens are enclosed within hedges, walls, or fences; the number of substantial houses, and how they are situated; the position of the church, and whether it is encircled by a wall, ditch, or otherwise; finally, whether towns and villages are surrounded or traversed by rivers or streams.

The officer commanding a reconnoissance should not rely entirely upon the maps furnished him, but rather regard them as useful references than as literal representations. He should never fail to rectify on his map the errors he may discover, and to supply any details in which it may be deficient. He must bear in mind that the longer it has been published, the less likely, of course, it is to be correct; for often, in a few years, some villages disappear altogether, some spring up, others, again, become joined and confounded under the same name. Roads change their directions; streams alter their courses; waters are drained off, and their places supplied by cultivation; fords are replaced by bridges; bridges are removed and destroyed; lands covered with wood, swamp, fields, meadows, change their appearance, and consequently their topographical designations. The limited scale, also, upon which maps are usually drawn, must often cause mistakes; consequently, an officer should look upon the map with which he may be supplied as a very convenient guide respecting the direction of

his route, but which, in its minutest details, is by no means to be implicitly trusted. Whenever, therefore, an opportunity occurs, he should be quick to secure all maps and plans of the country through which he moves; many of which, especially valuable for their minute particularity, are often found in the town halls, in the houses of agents and civil functionaries, and in the mansions of the country gentlemen.

When the reconnoissance is finished, the commanding officer makes a written report to the general, if his verbal account is deemed insufficient. This report, as all military writings, ought to be clear, simple, and concise, without, however, omitting details. It is the substance of the report, and not the style, which constitutes its merit. The officer will clearly distinguish what he has seen and knows; what he has learned from hearsay; and what he conjectures. He will guard against flights of imagination, and confine himself to realities. Finally, he will avoid speaking too much of himself: if he has reason to be pleased with the result of his mission, he will adroitly bestow just praise upon his troops.

There is no duty in the service more important than reconnoitring, and none more calculated to gain honor and distinction for an officer than the successful performance of it. We will, therefore, engage a little longer the attention of our readers, and place before them the analysis of a reconnoissance, together with a report of the same, taken in substance from De Brack's excellent work already quoted; and we commend them the more to their careful perusal, as they seem to embody every possible quality required in an officer employed on this service, and relate so clearly and simply the several details that should be observed in order to perform it with credit and success, that they cannot fail of being studied with the utmost benefit.

A captain of chasseurs is supposed to receive an order to

place himself at the head of one hundred men of his regiment, with the following instructions: "He will reconnoitre the small town of Neustadt. If it be occupied by the enemy, he will endeavor to make a few prisoners, whom he will bring back. He is to obtain information respecting the Prussian corps d'armée, which ought to have arrived in the neighborhood of that town. He will carefully examine the country he passes through, and bring me a description of it; of what kind, and in what condition are the roads, bridges, streams of water, &c. He is, if possible, to return the day after to-morrow, by ten o'clock in the morning.

(Signed) General ———.

Bivouac of Grosthurm,
June 18, 1832, 5 o'clock, A. M.

The captain, having received this order from the general, takes a rough sketch from the map, in possession of the quarter-master-general's department, of the country he is about to go over, and then assumes the command of his detachment, which, in the mean time, has got ready. He proceeds to inspect this detachment, and satisfies himself that the pouches are filled with ammunition, that the arms are in good order, the horses well shod, and the men supplied both with provisions and oats; he then files it past. Three horses are lame, two are not strong enough to keep up in the ranks, one or two others are known to have a habit of neighing, some dogs are with the party; all these he leaves behind.

Once beyond the outposts and the line of patrols, he makes a halt, orders the girths to be tightened, the flags of the lances to be removed (at that time the last squadron of each regiment of chasseurs was armed with lances), the carbines to be slung, schabraques to be turned up, and cloaks to be rolled and put across the body; he places his Alsacians at the head of the column, with directions to speak nothing but German. Among

the officers there happens to be one of that country; he keeps him near himself, giving to a non-commissioned officer the charge of his division. The officer next in rank to the commander marches in rear of the column, so that it may be perfectly superintended. The advanced guard, composed of ten men, led by an Alsacian non-commissioned officer, marches one hundred yards in front. The country is open, the soil muddy; it is necessary to move rapidly; for this reason he does not detach flankers, which would only distress the horses, and delay the march to no purpose. The rear guard, formed of a corporal and four men, follows the column at a distance of fifty yards.

The advanced guard seems to hesitate; the captain increases his front, forms his platoons one hundred yards from each other, and upon the right side of the road, their right resting upon a ditch. He halts the column, and then sends to ascertain the reason of the stoppage of the advanced guard. It was the appearance of some horsemen, who have, however, been recognized as one of our own patrols returning. The captain interrogates the leader of it, but they have been in an opposite direction, and he can tell nothing but that some patrols of the enemy, of from twelve to five and twenty men each, showed themselves on the road to Ingolsheim, about a league farther on.

He now closes up his column, and resumes his line of march. The country changes in appearance, and becomes more undulating; a few eminences rise on the right, and command the plain: the captain detaches three men, well mounted, who follow along the ridge, and flank the detachment. After marching two hours they reach the extremity of the plateau, and a rich, extensive valley presents itself. Four roads meet here: that to the right is paved, and should lead to Ingolsheim; the third is merely a sort of path, winding along the

hill, and then, crossing the low ground, seems to take toward the woods which close the valley on the right; the fourth is a paved road, a continuation of the one from Ingolsheim, and probably leads to Neustadt by way of Berndorf. (See sketch, page 238.)

The captain, on consulting his sketch, finds he is not deceived, for it places the entrance of the valley and the junction of the roads at a distance of two leagues, and he has now been two hours on the march. It shows Berndorf to be two leagues farther up the valley, to the left of the extremity of the plain; and in that direction, at about such a distance, he does perceive a village. To be still more certain, he sends the Alsacian officer, with two chasseurs of the same country, to question a laborer, who is working near at hand. The officer addresses him in good German: "Well, my friend, have you seen any of our folks?—Who are they?—Why, the Prussians, to be sure.—No, I have not; but I know they have come to Neustadt and Baumdorf.—And the French?—Ah, the thieves! they say there are ten thousand of them at Grosthurm.—As many as that?—Yes, at the very least.—Well, we are going to join our people at Neustadt; which is the way?—Why, you must go along that road.—This!—No, that goes to Ingolsheim. —That one?—No; that's a by-way that takes you through the woods to Baumdorf; but this paved road is the one you must follow to go to the village you see down there.—Yes, I see, near the hill.—No, that's Bonn; but the one more to the right, down the valley.—There?—Yes, that's Berndorf.—How far is it?—Two leagues.—And from Berndorf to Neustadt, how far? —It will take you about five hours' riding.—Much obliged to you.—Good by."

The captain, then, is all right. He now considers a little; the enemy is in the neighborhood, and must have posts in the valley; it is broad day, and the route of his detachment cannot

be concealed, particularly if he keep the high road; the horses, too, will soon require rest; the screen of woods on the right along the valley, and so to the Baumdorf road, will hide his march; he makes up his mind, therefore, at once, and turning to the right by the path, descends the hill rapidly, and trotting across the open ground, gains the wood. He follows the track which appears to lead in the direction of his route; here his compass assists him; or should he not have one, he steers by the sun. The valley, which appears on the left through the trees, prevents his straying too much to the right. The march is continued in silence. The men speak low, and arrange their arms so as to make no noise by rattling against buckles, stirrup irons, spurs, &c. The difficulty of the ground now obliges them to lead their horses; but when again mounted, the pace is increased, and all is done without any given word of command, but by watching and conforming to the head of the column, which moves as compactly as possible, the advanced and rear guards being drawn closer to the main body.

It is now five hours since he left Grosthurm; the situation in which they are seems to be deserted, and the shade of the woods is thick. The captain quits the path, forms up his party in an open space, well surrounded by tall underwood and bushes, and dismounts. Sentries are posted in different places, from which they can command a view of all around without being seen. One half of the horses are unbridled, fastened to trees, and fed; the soldiers refresh themselves in silence, close to their horses, their bridles on their arms. The captain, meanwhile, has not forgotten to take such notes as will enable him, should the expedition be unsuccessful, to return the same way. He has traced the outline of his route in his note book, and branches of trees broken off at the entrance of the different paths, and local appearances well fixed in his memory, will serve as landmarks on his road back.

It is now one o'clock, and they resume the march. The country is pretty rough, and the horses are a good deal knocked up by six o'clock in the evening, when they come upon the road to Baumdorf. How next will the captain proceed? He is still two leagues from Neustadt. He does not know but the enemy may be there and in numbers; the detachment is fatigued, and should he be obliged to retreat pursued by cavalry perfectly fresh, he would certainly sustain much loss; besides, were he to advance immediately upon Neustadt, he would arrive there just at dusk, the time when cavalry is always on the alert; and if he delay, without procuring the means of resting his people and feeding his horses, his chances will not be improved.

He conceals his party, therefore, near the high road; a man passes, who is instantly seized, and threatened to be shot without mercy if he attempt to make a noise. "You come from Neustadt?—Yes.—Are the Prussians there?—Yes.—Cavalry or infantry?—Cavalry.—How many?—I don't know.—Is there any village near?—About a quarter of a league off.—Are there any detached farmhouses?—Several.—Are you acquainted with them?—I am.—Where are they, and of what description are the buildings?—One is close to the village; it is well stocked, the outbuildings are large and easily entered, because there is no enclosed yard.—And the other?—The other is three quarters of a league from the village, and half a league from here, near the edge of the wood, and in the direction of Neustadt; it is not so well stocked as the first; it has a courtyard surrounded by high walls and shut in with large gates; it is about a league to the right of Neustadt.—Take us to this one."

The captain, having ascertained that no one is passing along the road, crosses it rapidly, and again entering the forest, follows the guide, whom he has tied by the arm and given in charge to a non-commissioned officer. At two hundred yards

from the farmhouse he halts, examines its general appearance, and having caused it to be quickly surrounded, he pushes forward and enters the farmyard. A countryman, who was making off, is brought to him by one of the chasseurs whom he had stationed round the house. This man, with every one belonging to the place, and the guide, he orders to be locked up in a cellar, at the door of which is posted a sentry. The gates of the farm are closed, and sentries placed on the inside of those opening into the country; four men, screened from observation, are placed on the four faces of the building, at windows commanding a good view; the horses are unbridled and fed, the men refresh themselves and get some sleep; night comes on, not a light is shown from the windows, and stillness reigns throughout.

A patrol of five Prussian cavalry appears in front of the house, the men at the windows having given notice of its approach. Can it be an advanced guard? The detachment bridles up in a moment, mounts, and forms in the courtyard, sword in hand. The order is given, that in case the enemy should be in numbers, and attempt to enter, the gates are to be thrown open, a vigorous sortie made, and a retreat continued by the road they came. The patrol comes alone; shall they seize it? No; because there might be firing, which would give the alarm to a great distance. It desires to come in, and knocks at the gate; no answer; still they insist, and the Alsacian officer, imitating, as well as he can, the dialect of the country, at last replies that he will not let them in, and if they persist, he will go in the morning and complain to their officers. The patrol goes off swearing. The party again dismount, and feed their horses.

The captain interrogates separately each inhabitant of the farm, warning them that their lives depend upon the correctness of their answers. He learns that one hundred hussars are

in Neustadt, having come from Freythal, a town once fortified, and distant eight leagues; that they bivouac in the rear of the town, having a grand guard of twelve men on the road to Baumdorf, and a post of five on that of Weg; that they send out patrols in the directions of Bonn, Berndorf, and Baumdorf; that these patrols consist of twelve to fifteen men each, who go out generally at four o'clock in the morning and five in the afternoon, returning two or three hours after they started.

At two o'clock in the morning the captain bridles the horses, ascertains that they are well girthed up, and that the men are supplied with rations of oats and provisions; then setting at liberty one peasant only, whom he mounts on one of the farm horses, he puts him at the head of the detachment, and proceeds to take a position in the small wood a quarter of a league behind Neustadt. The party here dismounts, the men standing to their horses, and keeping the most profound silence.

At five o'clock, that is to say, one hour after the presumed departure of the enemy's morning reconnoissances, the detachment mounts, draws as quietly as possible near Neustadt, and as soon as it is near enough to have been observed, gets into a rapid trot, draws swords, springs into a gallop, charges the bivouac, and carries off both men and horses. The captain next secures the letters at the postoffice, makes prisoners of two of the principal inhabitants, one the postmaster, the other the mayor; these he puts upon two of the captured horses, and then, trotting briskly off by the Baumdorf road, he does not drop into a walk until he has made the turn to the right on that of Berndorf. The prisoners, without arms, and mounted upon the horses taken, are placed in the centre of the column. The advanced guard, of twelve men with an officer, moves a hundred and fifty yards in front; the rear guard, increased to twenty-five men and an officer, follows at a like distance.

The captain carefully surveys the road he travels, and of which he has to make a particular report to the general. He stops merely a few minutes at Berndorf to procure a guide and take some notes; and then, not liking to return by the meeting of the four roads, which must undoubtedly be a central point for the reconnoissances of the enemy, he strikes into a neighboring road on the right, crosses the plain, and ascends the high ground. Arrived at the top, he establishes his men in a situation removed from the road, behind the eminences which screen him on the side of Ingolsheim, placing vedettes to watch the low country and the valley; at the same time he feeds his horses. While this goes on, the captain examines his prisoners and writes his report, completing also the rough sketch of his route. When the horses are fed, he mounts again, and by a circuitous route regains the road to Grosthurm. At a quarter of a league from the bivouac he replaces the flags of the lances, and then, without altering his line of march, he challenges the outposts and rejoins his regiment. There he presents the captured horses to the commanding officer, and conducts his prisoners to the general, to whom he delivers the following report:

"Bivouac of Grosthurm, 19th June, 1832.

"Bearer of the order annexed, I set out yesterday at 5 o'clock, A. M., from the bivouac of Grosthurm, at the head of a detachment of one hundred chasseurs of the Eighth regiment, and advanced by the road from Berndorf to Neustadt. At 9 o'clock, A. M., I had turned that town; at 5 o'clock, three officers, forty Prussian hussars, the mayor, and postmaster of Neustadt, were in our hands. Ten of the enemy's hussars were left upon the field of battle.

According to the statements of the prisoners, the various information which I have been enabled to gather from the natives, and the contents of the letters which I hereto append,

Fig. 31.

ROAD TO FREYTHAL
FOREST
TO WEG
COPSE
ILL RIVER
NEUSTADT
200 H.
1300 I.
300 C.
200 H.
½ LEAGUE
½ LEAGUE
TO BAUMDORF
½ LEAGUE
3 LEAGUES
BONN
¾ OF A LEAGUE
BERNDORF
65 H.
340 I.
130 C.
70 H.
1 ¼ LEAGUES
2½ LEAGUES
N
W
E
S
HIGH TREES
TO INCOLSHEIN
THE ROAD FOLLOWED
H. HALT.

numbered 1, 2, 3, 4, 5, 6, 7, it appears beyond doubt that five thousand infantry, fifteen hundred cavalry, and six pieces of artillery, arrived the day before yesterday at Freythal, a town still occupied, under the command of General X. From the same sources I learn :

1st. That the division of infantry, two brigades strong, under the command of Generals Y and Z, is composed of the Second, Eighth, and Sixteenth regiments of the line, and of the Fourth Landwehr. The cavalry brigade, commanded by General A, is composed of the Brown hussars, under Colonel B, and the Fourth dragoons, under Colonel C.

2d. That one thousand foot, of the Sixth regulars, and two hundred horse of the Second Towagis, arrived the day before yesterday at Baumdorf, and that this detachment has sent out reconnoissances, numbering from fifteen to twenty-five horse, upon the road to Ingolsheim.

3d. That the artillery horses are in wretched condition, and that they have been compelled to leave behind several caissons during their late marches.

4th. That the infantry is excellent, but numbers in its ranks six hundred Poles from the duchy of Posen, and eight hundred from the Rhenish provinces.

5th. That the cavalry is well mounted, but broken down with fatigue; that the officers in command are disliked by the soldiers, and that there have been slight instances of insubordination.

6th. That the infantry is expected at Neustadt, where requisitions were made for twelve thousand rations.

The appended sketch illustrates the observations which I have been able to make concerning the various places, and the route which I followed.

The plateau, which commences at Grosthurm, and extends squarely up to within two leagues of that village, is wide and

unobstructed. Its apparent width is about one league. A few clumps of woods, and some hillocks, rise at its northeastern extremity; it is almost wholly sown with barley, oats, and rye. Artillery can traverse it in all directions.

The road is twenty-five feet wide, paved, and in excellent condition for its whole length.

At the cross road the plateau is about two hundred feet higher than the valley of Neustadt, and thence curves into the shape of a horse shoe, surrounding it at the southwest and east. The western part of the valley is nearly uniformly level, up to Neustadt, and is only broken by the hollow in which flows the river Ill. This interval is about a quarter of a league wide. Its eastern part gradually descends toward the river and to the northeast of Neustadt.

Four roads meet at the crossing, which is situated at the termination of the plateau.

The first is that of Grosthurm.

The second, to the right, leads to Ingolsheim, and runs southeast; it is paved, and apparently in good condition.

The third is a rough and narrow pathway, stretching to the northeast, and reaching the woods that enclose the valley on the right.

The fourth, that to Neustadt by way of Berndorf, stretches northward, and may properly be considered the continuation of the roads from Grosthurm and Ingolsheim; it is paved, thirty feet wide, and in excellent repair up to Neustadt.

Taking the cross road as a centre—

At two leagues and a half northward is Berndorf.

At three leagues and a half northwest is Bonn.

At six leagues north, and following the road which is the continuation of that to Berndorf, is Neustadt.

The valley is fertile, uniformly level, and its cultivation varied. The woods which shut it in on the right, extend, they

say, up to Ingolsheim and Baumdorf; they are of difficult access for cavalry, and impracticable for artillery, because they are traversed by footpaths only, and besides, the ground is made wet and heavy by numerous springs. In many places they are lofty, bushy, and offer a complete screen for any military movements. The plateau upon which they stand is about two hundred feet higher than the valley. In its southern portion it gradually descends as far as the Baumdorf road, which, at that part, is almost on a level with the town of Neustadt.

The hills which close up the valley to the left are covered with vines, from Bonn to Neustadt; they rise almost uniformly from two hundred to two hundred and fifty feet, their rapid slopes and flinty sides being intersected only by paths made by the laborers, but utterly impracticable for horses.

On leaving the plateau, the road to Neustadt descends into the valley by a declination, which appears to be, as nearly as I can judge, about 1 : 6; it is a good road, well paved, and reaches the base of the mountain by four windings.

To the left, in the valley, are grain fields, which extend up to the mountains, the declivity of which is covered with underwood. They are crossed by a wagon road, which stretches from Berndorf up to the brow of the plateau. The furrows are deep in these fields, and make them difficult for artillery and cavalry.

To the right are various plantations fringed with fruit trees, impracticable for artillery and cavalry, but admirably adapted for the ambushment of infantry skirmishers.

The country is the same up to Berndorf.

Berndorf is a large village, of about three hundred and forty inhabitants; it consists of wealthy farmhouses, with barns filled with grain and forage; the number of its horned cattle is estimated at one hundred and thirty, its sheep at five hundred, and horses at seventy.

The road at first narrows toward the entrance of the village, then widens, and finally winds around the cemetery, in the midst of which stands the church, defended by walls breast high. This cemetery would prove an advantageous position for infantry.

Leaving the village, you obtain a view of Bonn, three quarters of a league distant, a wretched village, inhabited by vine dressers, and situated upon the river Ill. A byroad leads toward it, practicable, it is supposed, for wagons.

At the right, a path, about a league and a quarter in length, reaches the wood, by crossing the plain, the culture of which here changes. From Berndorf to the Baumdorf highway, between the road and the woods, is nothing but meadows; those which border the highway are firm; the others, toward the woods, are swampy and turfy.

The road continues good, and winds toward the northeast, the fields on the left stretching to a young woodland, a half league in extent, which is separated from the mountain by the Ill. The soil of these fields, devoted to the cultivation of grains, is firm, the furrows not deep, so that artillery and numerous battalions and squadrons can deploy and manœuvre upon them.

After a four hours' march you come upon the road from Baumdorf to Neustadt and Weg, nearly at right angles. This latter road is thirty feet broad, but badly kept.

Turning to the left, and after an hour's march, you come to Neustadt. The Ill, which flows before the town, is a torrent about forty-five feet broad, with a rocky bed, and said to be fordable at present from Bonn to Müllbach, a village situated three leagues below Neustadt, and where, furthermore, are to be found rich mills, stored with flour. The Ill is crossed at Neustadt by a two-arch bridge, built of cut stone, and very substantial.

Neustadt is a small town of fifteen hundred inhabitants;

its streets are wide, but badly paved; its houses spacious, and solidly built. Its suburbs are composed of farmhouses, said to be abundantly stocked with grain and forage. There is a central postoffice in the town. The place is surrounded by gardens, enclosed with board fences, which can easily be torn down. The town, moreover, is open, and, commanded on all sides, it is incapable of defence. The inhabitants are said to be furiously exasperated against the French.

Numerous flocks belong to the town; it is estimated that it owns three hundred horned cattle, twelve hundred sheep, and two hundred horses; but the proximity of the woods furnishes a ready refuge in case of any fear of their abstraction.

Neustadt is commanded on the west and for a quarter of a league by a mountain called Grosskopf, the summit of which is barren and difficult of access, and the base covered with vineyards, which extend to Bonn.

At the northwest a valley opens, in which lies the road to Weg; on the north is the high road which leads to Freythal; at the northeast are some impassable swamps all along the Ill; to the east is the road to Baumdorf, which, for half a league, runs through the swamps referred to, and then crosses the forest.

Weg, a wealthy town of twelve hundred inhabitants, is said to be eight leagues off, to the northwest of Neustadt. The road leading thither is good, and, although not level, adapted to artillery.

Freythal, a town surrounded by some outworks, and with two thousand inhabitants, lies seven and a half leagues to the north of Neustadt; the road toward the town is paved, but in wretched condition. It passes through Waldfelden and Rosenfelden; the first, of two hundred inhabitants, is five leagues from Neustadt, upon the plateau which commands both valleys; the second, of three hundred inhabitants, is a league farther off in the plain before Freythal.

To sum up, the country which I have traversed is well adapted for war, for its features offer admirable positions, its plains permit the efficient action of all the different arms, while its abundance guarantees ample subsistence for a corps d'armée for many days.

I regret to announce the death of a chasseur of the Sixth squadron, named Roch, killed by a pistol shot while entering Neustadt; six others were wounded, but not severely enough to prevent their return with me.

I take pleasure in commending to the General the spirited conduct of the whole detachment, specially noticing lieutenant Campenet; second lieutenant Lorentz; sergeants Labarre of the Fifth, Guéridon (already decorated) of the Second, and Cuvilly of the Fourth squadrons; corporals Audebrand and Bouverot of the Fifth, and private Vitay of the Sixth.

Labarre, Guéridon, and Vitay were wounded while capturing the three officers whom I have brought along with me. Cannois, Cuvilly, and Audebrand were first in the attack, and behaved with unusual gallantry.

Bouverot saved the lives of one of his officers and two of his comrades.

The captain commanding the detachment,

(Signed) ———."

Though the duties of making topographical reconnoissances more particularly devolve upon the staff, the above shows how cavalry officers may be called upon to explore localities, and give correct descriptions. Since the art of delineating the different levels upon a plain surface, by means of etchings and declivity lines, is acquired solely by long study and practice, only a few attain great proficiency in it, as is the case in other kinds of drawing and even writing. But as every officer should be able to write legibly and express himself correctly, so should

he be able to handle a pencil with some facility, and illustrate by a few lines what words alone would convey very imperfectly. The map that accompanies the above report is therefore purposely drawn in a very simple manner, to show the minimum skill admissible in this style of topography. For those who think even this too difficult, Dufour proposes an easier method, which for hills, for instance, consists in marking their contour by two curves, one indicating the top, the other the foot of the slope. These lines do not accurately represent the different levels, but they are those which the eye seizes most readily, and which flow most naturally from the pencil when we must hastily draw the general outlines of a plateau, a hill, a ridge, &c. Between these two lines there is usually room enough for a few words to state the details of the slope; whether, for instance, it is gentle or steep, accessible or not to cavalry, its approximative height, &c. In order that the lines circumscribing the heights may not be confounded with other conventional signs, they must consist of long dots. Figures in parenthesis are also added to indicate the height between the upper and lower curves, the height being given as it appears to the eye, and only on a rough estimate. In this way the map may be made to represent, very distinctly, all that it is most important to know concerning the differences of level, in a military point of view; the correctness depending not so much on artistic skill as on the coup d'œil of the drawer, which can be acquired only by long and steady practice. The accompanying sketch, Figure 32, will show how this can be done, and also furnish a simple method of portraying the main features of the ground, such as water courses, ponds, marshes, roads, rocks, woods, vines, towns, villages, farmhouses and other isolated structures that may become important points in battles, such as embankments, ferries, stone and wooden bridges, &c.

Watercourses are represented by two lines, one heavier

than the other. An arrow denotes the direction of the current. A mill is seen at the lower part of the river. On the right is a stream flowing between high banks; on the left, another flowing through the plain, both emptying into the river. Ponds and lakes are indicated by lines of contour, and by threads of blue tint.

On the left is a ferry boat. In the centre is a stone bridge, distinguished from a wooden bridge, such as may be seen over the small stream on the left, by its width and its abutments on both banks. A ford is indicated by a dotted line across the river.

Marshes are expressed by horizontal lines with some points of grass; "practicable" or "impracticable" is written within.

Woods and vines are indicated simply by tracing the contour, and within it writing their nature, whether thicket or forest, with or without undergrowth, &c.; a little vine is more quickly and easily pencilled than any word. If colors are used, India ink or yellowish green will designate woods; and violet, vines.

Rocks are somewhat difficult to represent; and yet they must never be omitted. If they are arranged as long walls, their crest and base may be drawn in irregular lines, with other lines thrown in between, as in the sketch. A few words will complete the description.

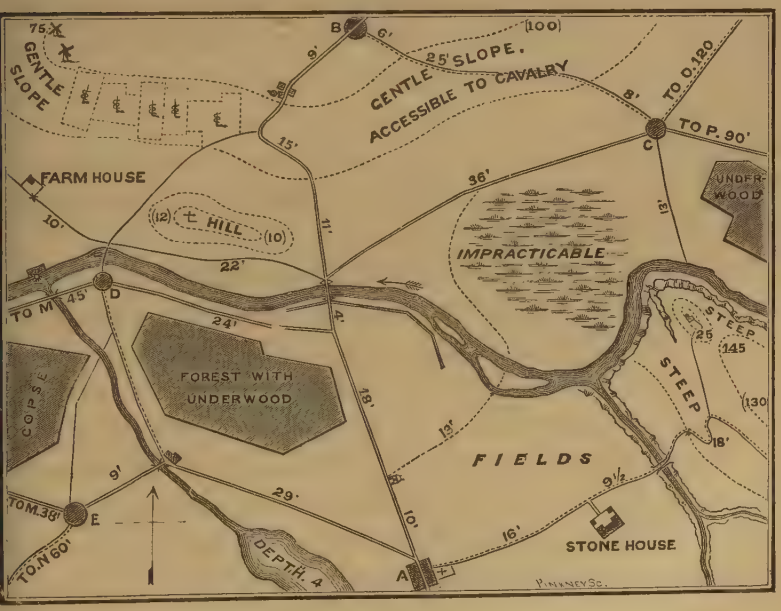
If it were necessary to draw all the houses, &c., in towns and villages, it would be an endless task. Moreover, there would be no room for them on a map embracing a large tract of country. A village is therefore represented merely by a circle filled with parallel lines. A town is indicated in the same manner, except that a square is substituted for a circle. A red tint may replace the lines for habitations. Isolated buildings, such as churches, farmhouses, and taverns, are designated by their form only, without regard to the scale.

What we have said of buildings applies equally to roads; their width must be exaggerated to render them visible. A high road, such as that from A to B, is represented by two parallel lines; so is a wagon road, as from D to C; the lines, however, are nearer. Roads practicable only for light carriages, such as from C to B, are indicated in the same manner, except that one of the lines is dotted; pathways by a single line only. As distances are essential in a plan of this kind, they must be written along the lines between the objects, and expressed in hours' marching, at the rate of the ordinary gait of a foot soldier. Roads leading to places beyond the map, state their names and distances.

Levees and embankments are represented by two parallel lines with cross lines between, to distinguish them from roads, as given in the sketch, near the stone bridge.

The sketch is completed by a meridian line.

Fig. 32.



However little time such a sketch may require, there are occasions when circumstances will not allow even that, and when the reconnoissance must be made at a gallop as it were. We must then be content with a few rapid notes, and afterward prepare a sketch from recollection, on our return to camp. To be able to do this with tolerable accuracy, is perhaps one of the most useful talents an officer can possess. Mere practice, however, will accomplish wonders, and local memory may be almost indefinitely improved.

When reconnoissances note nothing but the details of the route traversed, they are much more simple, and are called itineraries. They are expressed in conventional signs and in notes written in columns five or six inches wide, previously prepared for the purpose. On every march one of the officers should be charged with the duty of making the itinerary. On it he notes all the characteristics of the road, all that is remarkable on the right and left, military positions, breadth of defiles, steepness of slopes, what improvements are necessary, &c. The distances are represented in hours' marching, and all buildings express their capacity for lodging soldiers. The notes begin at the foot of the sheet, and are continued upward, as in Figure 33. They are afterward numbered, or what is better, pasted together, to represent uninterrupted routes from one end to the other.

Whatever be the object of a reconnoissance, the commanding officer must be ingeniously quick to guess and surmise, and should carefully notice every sign that can contain a meaning; for often from circumstances seemingly insignificant and empty, an intelligent mind will elicit the plans and purposes of the enemy, as fully as though he had rendered a detailed account of them himself. Every man, therefore, must be taught how to collect these signs; it will afterward be the duty of the generals, or of the chiefs of the staffs, to extract the greatest advantage

Fig. 33.

| &c. | | &c. |
|---|---|---|
| Woods at 300 yards from the road. | TAVERN | Many scattered houses in the neighborhood. |
| | 35' | |
| Distance from A to D, 4h. 50'. The route is good between these points, except near the river, where are deep ruts, which must be filled for the passage of artillery. | TOWN D. | Surrounded by old walls; accommodates 8000 men. |
| | 45' | |
| | | River fordable. Stone bridge; admits 10 abreast. |
| | 25' | |
| | HIGHEST POINT | From the bridge to the highest point, double teams are needed. |
| | 1H.10' | |
| | C. | |
| | VILLAGE B. | Accommodates 1200 men. |
| | 35' | |
| | | Marshy Stream. |
| | 40' | |
| The plateau offers a good position for defence. The front is covered by the marshy stream, the flanks rest on woods, leaving an interval of 4000 yards. | FARM HOUSE | |
| | PLATEAU | Road to Y. in 4h. 30'. Practicable for wagons. |
| | 45' | |
| | 30' | |
| | CITY A. | Not capable of defence. Accommodates 10,000 men. |
| GENERAL REMARKS. | CONVENTIONAL SIGNS | PARTICULAR REMARKS. |

from all that is reported to them. The color of coats and trowsers, the height and shape of the headdress, the distinctive marks, the numbers on the buttons, the plates and articles left behind; the number of vedettes, sentries, fires and tents of the enemy; the frequency and course of his rounds, patrols, and reconnoitrings; the nature and time of the calls of trumpets and drums; the site of signposts and of poles with straw; the trees or branches of trees cut down and placed in a certain direction; the arrival of reënforcements and new uniforms, the collecting of fascines, &c.; all these must engage the special attention of every man observing the enemy, whether in bivouac, camp, or cantonment. The depth and front of columns, the number of subdivisions, the nature of the troops, infantry, cavalry, artillery, baggage trains, &c.; the speed, the direction and volume of dust; the glittering of the arms, and the number of the scouts and flankers must be particularly observed with regard to a corps in march. The number of lines, their extent, their composition of troops, both deployed and in column; the caliber of their pieces; the relative position of infantry and cavalry; the number of skirmishers; the manœuvres going on, such as breaking into columns, concentration of troops or of artillery at a certain point, flank marches of one or several corps, &c., must receive most searching notice, when watching an army preparing for battle. If we follow a troop in march, we must carefully examine the tracks of men and horses, of the carriage wheels, of cattle and beasts of burden; the relative places of these tracks, whether they are close and regular, and pursue an unvaried order; we must examine whether the sites of haltings are frequent or far between; whether the route is strewn with the remains of animals; if the carcasses of horses are lean and sore at the loins and withers; if there is blood on the ground; if there are newly-made graves, and whether any marks denote that they cover generals or field officers; whether the country

has been plundered, and the houses burned; whether there are remnants of beef, mutton, or horses; how long the fires have been dead, how numerous they were, what the amount of ashes; whether the bridges are partially or wholly destroyed; whether the inhabitants of the country are anxious, depressed, timid, excited or satisfied, &c., &c.,

As the ground to be traversed is seldom familiar, guides must generally be employed. They should be selected with the utmost care, and compelled by force, if they do not serve willingly. A guide, taken against his will, must always be treated with consideration, lest the desire of avenging bad treatment overpower his dread of death, which he knows to impend should he prove treacherous. Every guide precedes the head of the column by a few paces; he must be assured of a handsome reward if he is useful, even though he serves unwillingly. Punishments are not mentioned, except when there are grounds for mistrust. He marches free when there is no doubt of his good intentions; otherwise, and most frequently, he must be forcibly compelled to remain. For this purpose mount him on a bad horse; tie one of his legs to the stirrup, that in some difficult road he may not attempt to jump off; give him the bridle, but pass the curb reins over the horse's head and hand them to a corporal, who with drawn sword rides on his left, while he is followed by another with pistol in hand. These precautions are not superfluous, for on bad ground it is often necessary to break by files, in which case the guide should always be preceded and followed. His escape might prove no great loss, but he would surely betray the party with whom he felt no interest to remain. Therefore make his task as little painful to him as possible. When you fasten him, tell him kindly that you do so with regret, and only for his good, for if he were free he might attempt to get away and be killed. Even a trustworthy guide ought to be carefully

watched when danger occurs, lest fear might induce him to make his escape. Two or three safe and intelligent men should be placed about him, who, without apparent intention, confine him among themselves. Allow none to communicate with him but those appointed for the purpose; and, if in an enemy's country, appear even harsh and rude with him, that he may not be suspected by his countrymen. In a word, protect your guides, and always treat them kindly; and if they have served you well, and it is in your power to repay their service, take pains to do so. It is by far the best policy.

We have shown that reconnoissances are important means of obtaining knowledge of the enemy: another and less dangerous expedient is espionage. Unfortunately, but undoubtedly, persons can always be found ready to sell their honor and betray their country for a price varying with the rank they hold in society. These means, however costly, should not be neglected, for on some good item of intelligence often depends the success of an enterprise. Painful as it is, we must nevertheless, therefore, accept such services, though we scorn the wretches that render them. It is gold they require; give them plenty. They are always at the beck of those who pay best; sometimes they serve even both parties. Deal summarily with such; without mercy hang a spy who thus betrays you, though you could scarcely expect otherwise; but first use him to blind your adversary, and then dispose of him. Marshal Pelissier used a spy whom he preferred to all others. He was a shrewd Armenian, thoroughly devoted to the Russian cause. The marshal knew this, and put his questions so skilfully, that when the final attack on the Malakoff was made, the Russians confidently expected it at a different point below.

"Espionage," says General de la Ferrière, "is one of the most important arts of war. The general who uses it adroitly will secure valuable advantages, sparing his troops both fatigue

and engagements, and often obtaining, without loss or danger, results which, without exact intelligence, would have cost him endless marches and countermarches and much bloodshed. To know how to pick, train, and employ spies, is rather a natural gift than the effect of study and application. It will be found useful to maintain, in every independent corps, a special service for espionage. The man that is to direct it, must be selected from those who are dissembling, sharp, cunning, and subtle; whose eyes are now timid, now bold; who know how to read others' countenances and cloak their own feelings. They should be prepossessing and imposing in their demeanor, and supple and pliant to play any part."

Officers who do not scruple to disguise themselves, to assume a false profession and a false title, in order to penetrate the designs of the enemy, may under the circumstances be counted as innocent of falsehood, as a soldier is guiltless of murder when he slays with his sword. As captured spies moreover are hung, they risk their lives for the welfare of their country, since the necessities of war require their agency. Their services should therefore be encouraged; for a general would be more fully and safely informed by one of his own men devoted to espionage, than by shepherds, peddlers, or women, suborned for that purpose. Spies, to whatever category they belong, should be liberally rewarded. If they are hirelings, give them money abundantly, for they run the risk of the rope; and even when they prove treacherous, do not inflexibly punish them, for, as we have seen, their treason may often be turned to account. Are they soldiers, let promotions and distinctions be showered upon them, for the great secret of success in war lies in knowing the intentions of the enemy; and they, who discover his designs, render a service which entitles them to the highest rewards.

The intelligent and educated can, of course, give the most

valuable information. No effort, therefore, should be spared to secure spies who can understand, divine, and know all. "They may be found," says Feuquières, "in the cabinets of princes, and in the councils of the generals, in towns belonging to the enemy, and in monasteries. Some offer themselves, others are found by the generals or ministers; but the desire of gain is the urgent motive that impels them to undertake the business." Luxembourg used to pay the secretary of the king of England, and long knew all the projects of that monarch. There are, in all countries, and in all armies, men of high standing, capable of being bribed. When you have found one willing to serve you in a mercenary way, do not rely on him until you have tried him, and even then do not trust him implicitly, unless he has left with you such guarantees of his fidelity as his wife, his children, or a large portion of his fortune. But in addition to secret agents, kept in the camp of the enemy to penetrate all his designs, we must endeavor to ascertain his positions, strength, material resources, and moral condition, in a word, all that eyes can see and ears hear, rather by means of intelligent soldiers and officers, who approach the outposts, climb trees, disguise themselves, &c., than through the agency of traitors, deserters, travellers, and country people. These merit but little confidence, because they cannot understand the military particulars they see. General Luckner, in the seven years' war, often reconnoitred in the garb of a peasant, or dressed as one of the enemy's hussars. Vauban always went to examine in person. Once, at the siege of Luxembourg he was discovered when crossing the glacis at the break of day; he beckoned them not to fire, and went on instead of turning back. The enemy, taking him for one of their own men, let him pass, and Vauban, after having seen what he wanted, quietly returned, saved by his admirable sang-froid. Poor André fared differently.

When a traveller, a peddler, or a suspicious person presents himself or is arrested, search him thoroughly; note the cut of his beard and of his hair, examine his linen, whether it corresponds with his clothes; see to the shape and softness of his hands, &c. Ask him his name, country, and papers, whence he comes, whither he is going, and what is his business there. If he is seen to swallow any paper, a strong dose of salt and water will easily expel it. It will be difficult for a spy to stand a good course of cross questioning. Do not, however, hastily condemn every one who shows confusion; and be not too zealous to physic or nauseate every poor peddler that happens to fall into your hands.

A deserter is asked for his name and country, the cause of his desertion, the number of his regiment, the name of his colonel, his immediate general, and the commander of the forces; the strength of his own corps and that of the whole army; whether the distributions are regularly made; whether the men have received their pay, how many cartridges each carries, how many guns there are, if there are many sick or wounded in the hostile camp, if the men have confidence in their chief, are kindly treated, &c., &c. The same questions are put to a prisoner. Of course, not much reliance can be placed on their answers; from ignorance or ill will, they either will not answer categorically, or they give such replies as they think most agreeable to us; still, by varying the questions, and repeating them suddenly under different forms, we can easily estimate the amount of truth their information contains.

When direct communication is desirable, it is made by a flag of truce. Officers sent on this duty, are sometimes taken prisoners or injured through ignorance of the customary modes of procedure. A flag of truce, showing himself always to the foremost line, and to men under the excitement of battle, whose animated movements little accord with his own quiet

intentions, ought most cautiously to feel his way at first, especially as they may have been ordered not to receive him, and so in perfect fairness he may be captured. The officer selected for this duty should therefore be thoroughly acquainted with outpost service, and the peculiar habits of the enemy to whom he is despatched. He ought to be accompanied by a trumpeter, that if attacked when alone on their advance, they may be able to extricate themselves.

Before sending out a flag of truce, the officer commanding the advanced guard should halt his skirmishers and cease firing. The flag will choose the most conspicuous part of the line to move from, fronting the commander of the enemy's skirmishers, for he will thus be sooner observed; and that officer, comprehending his purpose, will insure his protection. He should advance at a walk beyond his own skirmishers, preceded at a little distance by the trumpeter, and then halting, direct the latter to sound. As soon as they have been noticed, they should both deliberately sheathe their swords, in such a manner as to be remarked, and the officer should wave his handkerchief in his right hand. He should not allow himself to be approached by the enemy's skirmishers, until he is assured of their peaceful intentions, and sees that they act by order of their superior. Being satisfied of this, he will ask to be immediately conducted to an officer, and, while permitting his eyes to be blindfolded, will act with self-possession and politeness.

The object of a flag of truce is generally twofold, and its secret purpose is often more important than its ostensible one. Some frivolous pretext may serve to cloak the reconnoissance, which it affords, of the enemy's camp, and for this reason none but an officer of superior intelligence should be employed. On arriving at headquarters, when his eyes are unbound, he will, of course, make the best use of them, rapidly scanning the peculiarities of the ground, the arrangement, description, and

appearance of the troops, &c., which a practised eye soon notes, notwithstanding the blind always thrown over them. If he has not this opportunity, he must listen attentively to the conversation around him, for a chance word often conveys great meaning. He must remember, moreover, that he is himself an object of much suspicion, and that many seemingly trivial questions will be addressed to him, which will require the most guarded answers.

Not only the officer, but the trumpeter also should be carefully selected; for, as the latter will certainly be invited to drink, and be interrogated, it is of great consequence that he be a sober, prudent, and steady man. A flag of truce entering a camp, is always an object of uncommon and universal curiosity. He is examined from head to foot, and regarded as a specimen of the troops with which he serves. By all means should this specimen be one that will produce the very best impressions, and both officer and trumpeter should be distinguished for their fine soldier-like appearance, and both be well mounted.

A commander of skirmishers should never on any account cease firing, although the enemy may have done so, without orders from his superior; but he should keep up a gentle fire, and forthwith send to the officer of the advanced guard, to receive his directions; meanwhile carefully observing whether the approach of the flag of truce may not be a ruse to gain time, or cover some movement of attack. If the general of the advanced guard order the firing to continue, the flag must be signalled to retire; but if he is to be received, the firing must cease, and the officer, sheathing his sword, should advance, accompanied by two non-commissioned officers and a file of men. He will then inform the flag that he is admitted, and will blindfold both his and the trumpeter's eyes, and placing each in charge of a non-commissioned officer and horseman, will thus conduct them to headquarters.

It is generally most prudent not to unbind the eyes of the flag of truce; sometimes, however, this precaution may be unnecessary, but of this the general commanding is the sole judge. If the officer is led to a place whence he cannot see the troops, there can be no imprudence in uncovering his eyes; on the contrary, there may be gain, for the commanding officer in conversing with him, can more distinctly discern the effect of his remarks, and thus obtain useful information.

If a view of our troops is calculated to impress the enemy, there can be no harm in showing them to the flag of truce, especially if the offensive is quickly to follow his dismissal. "Unbind the eyes of that officer," said General Maison, dismissing a flag of truce of the Duke of Saxe-Weimar, when, in 1804, he was cut off before Courtray by twenty-five thousand men of the Holy Alliance. "Your duke is mistaken as to our numbers, for you see we are only six thousand. He also seems not to know that my title is that of general of division, since he allows himself to write on the back of this letter, Mr. Maison. Go and tell that gentleman, on my part, that he ought to remember that I was a general when he was yet known but by his scullions; you may also tell him that I give him just ten minutes to clear the road." Twenty minutes afterward the duke's army was routed, and the victorious French marched on to Lille, carrying with them all his guns, his standards, and part of his infantry. This, certainly, was cleverly done; though greater dignity, on the part of the general, would perhaps have been more becoming. Washington, being addressed by Sir William Howe as Geo. Washington, Esq., simply returned the letter unopened, with word that there was no such person in the army.

When confronting armies remain for some time inactive, and the commander-in-chief can obtain no certain intelligence of the enemy's designs, surprises are undertaken, for the pur-

pose of making prisoners, especially of officers. To execute a surprise successfully, requires a knowledge of the enemy's post which it is intended to surprise, as well in its own position, as in its connection with other posts. This information is obtained by some of the means above described. If the post can be surrounded, there is a probability of success; and in such a case, the fright caused by an onset in the rear is of the greatest assistance. The existence of difficulties favors the success of a surprise; the stronger a position is, the less do the troops who occupy it expect danger. Bad weather at night is always a powerful auxiliary, because it relaxes the watchfulness of the enemy. Besides, men frightened out of their sleep seldom have their wits about them at the first moment; disorder and confusion are unavoidable; ordering and obeying are equally difficult, for neither officers nor men have their eyes half open. We may, therefore, easily understand why more surprises succeed than fail.

Benningsen relates an instructive example of a successful surprise. In the summer of 1794 he was at Trabe, in Lithuania; five miles from him, near the little town of Oschmen, lay a Polish corps, which he determined to surprise. He marched at three o'clock in the afternoon; at seven in the evening, after having gone two miles, he stopped for an hour at the little town of Olshau, to feed. After resuming his march, he placed fifty Cossacks at some distance from the advanced guard, preceded by three men fifty paces in front. The utmost silence was enjoined; firing was forbidden; the fifty Cossacks at the head were ordered, if attacked, or if they fell in with anything, to gallop off to the distance of a verst, on the road, and there await the advanced guard. By this dispostion the enemy's first and second cavalry outposts were cut off, and the march was continued through a wood. When the general had reached the edge of the wood, he saw the hostile corps, about eight hundred

yards in advance; the river Oschmenka ran in front of their position; their left flank rested on the town of Oschmen; two new, broad bridges spanned the river. All was in motion in camp; the cavalry had bridled up; the Russians could observe everything. Day broke; the general formed two columns, and advanced from the wood toward the bridge. At last the sentries fired, when the Russian cavalry crossed the bridges at full gallop, and dashed into the camp. The disorder was unbounded; six hundred men were cut down, the rest made prisoners, and all the cannon, baggage, &c., were taken.

The plan of a surprise, like all others, depends upon the object of operations, and the lines which lead to it. Secrecy of march is an important condition; the safety of retreat must be secured. Small surprises are best executed a little after midnight; great ones a little before daybreak. A general plan of rendezvous after the operation, and a signal of recognition, as a word, white handkerchief, or the like, should be previously agreed upon. Firing must be positively forbidden; the enemy should be attacked impetuously, with lance or sword, for the success depends wholly upon the rapidity of execution. The smaller portion of the troops employed, at most one half, should be sent into the place to be surprised; the larger part should remain outside, prepared for action, ready to move as circumstances demand. Surprises in several columns usually fail, because the columns seldom all arrive at the same time, even though watches have been carefully regulated. To cut off all possibilities of surprise, every means of attack should be thoroughly studied, and abundantly provided against.

If surprises of positions are very likely to succeed, those of convoys are even more so, on account of their difficulty of defence. In these operations everything is to be gained and little to be lost, for should the enemy lack numbers or skill, a part of his convoy is easily destroyed or brought off; should

the attack fail, nothing need be feared from him on retiring. The attacking corps is generally composed half of cavalry, half of infantry. If it can conceal itself behind a wood, a height, in a grain field, or other hiding place, and thus surprise the front or rear of the convoy, and envelop it before aid arrives, the most complete success may be expected; this method, therefore, should always be attempted before proceeding to open attack. But so much negligence on the part of the commander of the convoy is hardly to be supposed; on the contrary, we must expect the escort to be on the alert, and marching in good order. Hence it will be necessary to distract his attention, by directing against him several little columns and many skirmishers, who must endeavor to find their way to the wagons and kill the horses, in order to encumber the road. The cavalry, by a circuit, throw themselves rapidly upon all parts badly protected. If they reach any of the wagons, they content themselves with driving off the teamsters and cutting the traces, for this will stop all the wagons in the rear. If we may choose our time and place, palpably we should attack when part of the convoy is in a defile, and either front or rear can be enveloped. Success is then certain, for the encumbrance of the defile will interrupt communication, and cut off aid from the other troops. Such good fortune is rare, but there are always chances in favor of an attack upon a convoy, wherever it may be. When it has been seized either in whole or in part, it should be hastily removed, before the enemy can arrive in sufficient force to retake it. But, rather than surrender, destroy the wagons, and place the most valuable articles on the best horses, and move off at speed. The attacking party should avoid all further contest, since the object of his enterprise has been accomplished.

Even when convoys travel in the rear of an army, and through a country entirely under its control, they may be

carried off with slight hazard, for nothing is more difficult than their defence against a serious attack. Ordinarily, they are exposed to the surprises of partisan corps only, or light troops, which, from their very paucity, can find their way to the rear of the army. It is to guard against these that convoys are always accompanied by an escort of both infantry and cavalry; the former distributed, when too hotly pursued, between the intervals, or placed even within the wagons, to protect and defend them on all kinds of ground; the latter to scour the country at a great distance around, both to give timely warning of the enemy's approach, and participate in the defence of the train against an attack of cavalry. As the latter can sweep rapidly from the front to the rear, they might easily find an unprotected part, were the escort of infantry only. To illustrate the facility of such attacks, it is sufficient to state that a wagon drawn by four horses occupies fully ten yards. Thus two hundred wagons, moving in a single file, and exclusive of intervals, would form a train more than two thousand yards in length. On so long a line it would be impossible for infantry alone to meet the feints of cavalry, and repel its real attacks.

For this reason the escort of a large convoy should consist of an advanced guard, of cavalry only, and preceding it three or four miles, to search the route thoroughly, both right and left. However, as the enemy may nevertheless elude the vigilance of the scouts, and lurk in covert between them and the train, a second body should be placed directly in front of the column, and throw out scouts and flankers on both sides of the road. The larger the train, the greater is the danger; the precautions should, consequently, be more numerous; and as the rear is almost as much exposed as the front, it is equally necessary to have a rear guard, with horsemen, to bring in prompt intelligence of every important occurrence. The main body of the escort, which is composed chiefly of infantry, is divided into

three parts: the first remains at the head of the column, having with it workmen and wagons supplied with fit tools and material for the repair of roads and bridges; the second is placed in the middle of the column, and the third in the rear.

The troops should by no means be distributed along the entire extent of the line, because, at the moment of surprise, they would be nowhere strong enough to repulse the enemy. Only a few men are detached from the three divisions mentioned, to march at the side of the road, and force the drivers to observe the prescribed order and keep their proper distances. As the drivers are generally only hired men, and impressed to serve against their will, they are quick to escape with their horses at the first appearance of danger. It is necessary, therefore, to maintain a severe discipline among them, and not to allow them to leave their horses or chat with their comrades. Should a wagon break down on the route, its load is promptly distributed among the other wagons. When such an accident occurs, a signal is made to stop the train; but if only a slight repair is necessary, the wagon leaves the file, and afterward takes a place in the rear. When the road admits two wagons abreast, such a disposition should always be made. A convoy usually halts for the night near a village, because it can there find provisions for man and beast; but it is safer to pass through it before halting, that on the resumption of its march early the next morning, it may have the defile behind rather than in front; for the enemy may have approached during the night, and could rush upon the train while a part of it was yet in the village. On the march it is well to have an occasional false alarm, to inure the drivers to the manœuvres required for resolute defence. During combat, the latter should be carefully watched by the men detailed for this duty, who should shoot them down at their first attempt to unhitch the horses in order to escape.

Small corps of irregular troops, detached from the main body of an army, and acting independently against the enemy, are called partisans. Bold partisans do not content themselves with harassing, seizing, and destroying the endless trains of military stores; they venture also to attack the troops which follow the army as reënforcements, the depots of cavalry, artillery, hospitals, &c. A couple of daring and able partisan corps may thus cause incalculable injury to the enemy; and when they operate in a country they thoroughly know, and where they derive every kind of assistance from the inhabitants, they may venture on enterprises the most audacious and extensive. But, that they may not become the scourge of the very people they are intended to protect, they should be duly authorized, and bound by the same discipline as the regular troops. They should also wear a uniform, as simple as they please, but one which allows them to be known, and distinguishes them from those lawless bands that too often pervert the unavoidable violence and calamities of war to purposes of indiscriminate cruelty and plunder. Partisans should, therefore, be provided with papers which legalize their existence; else they might be taken for brigands, and treated as such. They may be accounted on land what privateers are at sea.

Since the Peninsular war, the term guerilla has been very generally used, especially on this continent, to designate partisans. It is the diminutive of the Spanish word guerra, war, and as such, it means little war, and, more particularly, war carried on by irregular parties. "The irregularity of the guerilla party," says Lieber, "consists in its origin, for it is either self-constituted or constituted by the call of a single individual, not according to the general law of levy, conscription, or volunteering; it consists in its disconnection with the army, as to its pay, provision, and movements, and it is irregular as

to the permanency of the band, which may be dismissed and called again together at any time. Other ideas are associated with the term, differently by different persons. Thus many associate the idea of pillage with the guerilla band, because, not being connected with the regular army, the men cannot provide for themselves, except by pillage, even in their own country —acts of violence with which the Spanish guerrilleros sorely afflicted their own countrymen in the Peninsular war. Others connect with it the idea of intentional destruction for the sake of destruction, because the guerilla chief cannot aim at any strategic advantages or any regular fruits of victory. Others, again, associate with it the idea of the danger with which the spy surrounds us, because he that to-day passes you in the garb and mien of a peaceful citizen, may to-morrow, as a guerilla man, fire your house or murder you from behind the hedge. Others connect with the guerrillero the idea of necessitated murder, because guerilla bands cannot encumber themselves with prisoners of war; they have, therefore, frequently, perhaps generally, killed their prisoners, and of course have been killed in turn when made prisoners, thus introducing a system of barbarity which becomes intenser in its demoralization as it spreads and is prolonged. Others, again, connect the ideas of general and heinous criminality, of robbery and lust, with the term, because, the organization of the party being but slight and the leader utterly dependent upon the band, little discipline can be enforced; and where no discipline is enforced in war, a state of things results which resembles far more the wars recorded in Froissart or Comines, or the Thirty Years' war, and the Religious war in France, than the regular wars of modern times."

For all these reasons, military leaders are generally averse to the use of partisans or guerillas. "Never," says the author of "Maximes," "employ on your own responsibility a corps of

partisans whose leader has unbounded latitude. He will invariably act for his own interest rather than for yours, and will provoke the inhabitants of the country which he passes through, alienating them, if friends, exasperating, if foes. He will ruin the resources of the country he is in, since he lives only by plunder, and oftener ransoms a village than carries off an enemy's convoy. In a word, if partisans rise to serve you, let it be at their own risk and peril; never pledge yourself to support their operations, to succor them, to provide for their wants, nor to give sanction to their acts; otherwise you may dangerously compromise yourself. Under no circumstances allow regular troops to act as partisans; you would soon repent it, for the least of your annoyances would be the speedy and entire disorganization of that portion of your forces."

Such, in the main, are the duties and services which light cavalry is destined to perform in the field. It has, therefore, been rightly called "the illuminating torch and the protecting shield of the army." With a numerous and well-trained light cavalry, generals may venture on the boldest enterprises; without it, they move along like blind men, groping in the dark over unknown and dangerous ground, and with a feeling of insecurity which checks enthusiasm and paralyzes action. This alone should suffice to show the importance of an arm which theorists may have occasionally underrated, but whose true merits have always been promptly and effectually vindicated by the realities of war. Nowhere has this been better illustrated than on this continent, where cavalry was once held in very low estimation, but where recent events have greatly modified opinion, and added authority to Jomini's declaration, that "the possession of a good and numerous cavalry must have the greatest influence on the final results of a war."

# CHAPTER VI.

## HISTORICAL SKETCH.

An effective cavalry, capable of performing the various duties described in the preceding chapters, implies not only a good selection of men and horses, but also a careful organization, a strict and steady discipline, and a high degree of training and instruction. Consulting history in reference to the subject, we cannot help noticing that among the different nations, and at different epochs, various systems have prevailed, in many particulars unlike the present, owing to a diversity of circumstances, which it is important to examine, in order to understand why we to-day reject what men in other times were studious to adopt. It is thus, by the accumulated experience of other generations, that we shall be able to direct our progress on the true path to improvement, which is as far removed from blind routine, obstinately clinging to all that custom and tradition may have long pronounced exclusively correct, as it is from rash innovation, ever restless and thirsting for change, and often substituting what is only good for what was infinitely better.

"No one," says Mahan, "can be said to have thoroughly mastered his art, who has neglected to make himself conversant with its early history; nor, indeed, can any tolerably clear elementary notions even be formed of an art, beyond those

furnished by the mere technical language, without some historical knowledge of its rise and progress; for this alone can give to the mind those means of comparison, without which everything has to be painfully created anew, to reach perfection only after many cycles of misdirected mental toil."

Although the limits of this work do not allow any wide excursions in the field of history, yet, considering the importance of the subject, we do not feel at liberty to pass it by entirely unnoticed. We therefore offer the following sketch, which, while it points the way to further investigations, may furnish abundant matter for reflection.

The history of the horse and of horsemanship is intimately connected with that of cavalry. The book of Genesis teaches us that the horse was domesticated in Palestine from the time of Jacob; and in the days of Job, horsemanship was in high esteem among the Arabs. Isaiah records that the Egyptian was considered the best horseman in the world, and Diodorus of Sicily informs us that Osymandias led twenty thousand mounted men against the rebels in Bactriana, and this historian reckons twenty-five generations between Osymandias and Sesostris, who lived long before the Trojan war. It is to this latter monarch that most of the sacred and profane historians attribute the introduction of regular cavalry, apart from and independent of the war chariots; and this distinction is very clearly and frequently expressed in the fourteenth chapter of Exodus, as where Moses, describing the passage through the Red Sea, relates that "the Lord said, Stretch out thine hand over the sea, that the waters may come again upon the Egyptians, upon their chariots, and upon their horsemen." That the latter may not be confounded with charioteers, we refer also to the fifteenth chapter, where the triumphal song of Moses proclaims that "the horse and his rider hath He thrown into the sea." Josephus is even more explicit, and asserts that

this army consisted of 200,000 foot soldiers, 50,000 horsemen, and 600 war chariots. The Hebrew writings often express the importance of cavalry, and, with their native figurative energy, picturesquely speak of it as "a hurricane of horsemen." Samuel, advising the Jews to abandon their longing for a king, said to them, "This will be the manner of the king that shall reign over you: he will take your sons and appoint them for himself, for his chariots, and to be his horsemen."

Herodotus mentions a light cavalry composed entirely of young women. Hippocrates describes the very operation which he performed on the heroines who served in that corps. This father of medicine seared the breasts of the young girls of the Tanais with a hot brazen vessel, that they might use the bow and javelin with greater facility. Plato also speaks of a cavalry corps of young ladies, existing five hundred years before the Christian era. Alexander had a squadron of one hundred young women equipped as horsemen and armed with battle axes: it was Atropates, satrap of Media, who sent him this pretty present. The Amazons, the subject of so much speculation, were doubtless mythical beings, although many believe them to have been a race of warlike women, who lived near the river Thermodon in Cappadocia, and fought on horseback. But whatever be the amount of credit to which all these details are entitled, one thing is plain, namely, the direct and constant reference to the East as the birthplace of the horse, where to this day he is more domesticated, and attains a more regular and perfect beauty, than anywhere else. Horsemanship, too, seems to be a native talent among the Eastern nations. They always have possessed a numerous cavalry, and it is now no uncommon thing for the Mahrattas, whose collective force of horsemen numbers two hundred thousand, to appear in the field with from sixty to eighty thousand mounted men.

The first arms which the earliest traditions assign to cav-

alry are the lance, the javelin, and the bow. These were employed not from caprice or ostentation, but as a natural consequence of man's physical weakness, and perhaps in imitation of those animals which use their horns for attack and defence. "In a barbarous country," says Marshal Marmont, "where industry has not yet found its way, where there exist neither manufactories nor armories, nor money wherewith to buy arms abroad, a man mounts his horse and wants a weapon. He cuts a long branch of light wood, sharpens the point, hardens it in the fire, and there is his lance. Later he procures a nail and fastens it to the end; his weapon has already become more dangerous. Finally, this staff is furnished with an iron tip regularly shaped, and behold the lance which is now generally adopted." A javelin is but a smaller lance, and some were made so light and slender as to bend or break at the first cast, in order that they might not be thrown back. From the lightest javelin to the heaviest arrow there is but a single step; and the need of a stronger propelling power than the vigor of the arm, naturally suggested the sling and the bow.

Xenophon relates that the Greeks had cavalry even before the first war of Messenia, 743 years B. C., and he distinctly asserts that Lycurgus organized both his heavy armed infantry and his cavalry into six divisions. According to Plutarch, Philostephanus ascribes to Lycurgus the organization of cavalry into companies called oulami, of fifty men each, which fought in square. In the time of Xenophon, the Grecian cavalry was quite respectable, and the treatise which this writer has left us, on horses and horsemanship, even now merits attentive perusal. Until the battles of Leuctra and Mantinea, the Greeks, who had generally made marked progress in the other departments of military art, were still ignorant of the immense advantages to be derived from a numerous and well-trained cavalry. It belonged to Epaminondas to enrich his country with this

new element of power. He succeeded in recruiting and disciplining a corps of five thousand regular cavalry, and his is the first imposing body of mounted troops of which we have a well-authenticated and detailed account. Thereafter, this arm made rapid progress throughout Greece, especially in Thessaly, abounding in pasture, and renowned for its fine steeds, and to whose bold horsemen both Philip and Alexander were greatly indebted for their victories. Subsequently, this arm lost much of its renown, and Philopœmen found it in the most disorganized condition. Fortunately, however, he knew how to restore it. He subjected it to a thorough training, and soon rendered it so robust, so adroit, so nimble, and so light, that every evolution, every movement to the right, to the left, to the front, to the rear, whether by individuals or whole squadrons, was executed with such rapidity and ease, that the entire mass seemed but one body, moving spontaneously, and as if animated by a single will. After this, the Ætolian cavalry was ever esteemed the best in Greece, and their numerous and well-trained squadrons rendered the utmost service to the Romans in their struggle with Macedonia, at the beginning of the second century before our era.

The Greek cavalry was divided into heavy, cataphracti, and light, mê-cataphracti, to which Alexander added a third kind, called dimachæ, intended equally for foot and mounted service. Only the heavy cavalry consisted of citizens capable of maintaining their own horses; the rest were mercenaries. At Athens and in Sparta, the former were held in high esteem, and all who applied to join the ranks, underwent an examination in respect both to bodily vigor and moral worth, by a hipparch or phylarch, appointed by the senate for that purpose. In the heavy cavalry, both horse and rider were clad in mail, and the distinctive weapon was a long spear or lance, often pointed at both ends. The light-armed rode unmailed

horses; their weapons were javelins or arrows. Neither kind used saddles or stirrups; the horses in both were ridden bare-backed.

Fig. 34.

Fig. 37

Fig. 40.

Fig. 38.

Fig. 39.

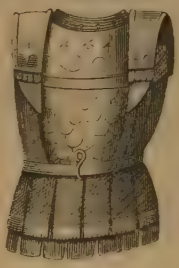
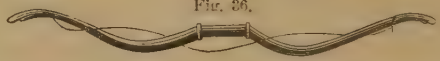


Fig. 35.

Fig. 36.



Their swords were usually straight and very short, worn at the right side, and held by a shoulder belt. As they were intended mainly for cutting, they were without point and had a short cross-guard; see Figure 34. Another kind, still shorter, and used as a dagger, was pointed and without a guard; see Figure 35. Their bows, of various forms, were generally single curved, except the Athenian, which was double, and had a straight piece in the centre on which to rest the arrow. Figure 36 represents such a bow, and Figure 37 a quiver. The cuirass, consisting of a breast and back piece, had plates passing over each shoulder to unite the halves, which at the waist were held together by a belt. Figure 38 shows a cuirass formed entirely of metal plates, and Figure 39 another, which is set with scales, and has leathern pendants faced with woven wire, to protect the abdomen and thighs. Some cuirasses were

made of ox hide, gaudily painted, and studded, plated, or bound with metal. At a later period they were also made of

Fig. 41.

Fig. 42.

Fig. 43.

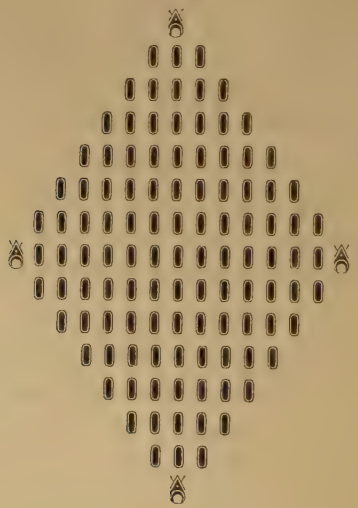
Fig. 44.

stiffened linen, padded with a thick quilted wadding, and decked with metal. The helmets, for which Grecian ingenuity had devised the greatest variety of form, were, like the cuirasses, usually made of wrought metal; occasionally, however, of leather adorned with metal. Some had visors with holes for the eyes, as in Figure 41, or simply cheek pieces, as in Figure 42; all had neck pieces. The crest was often fashioned in the quaintest style, and was usually surmounted by a plume of feathers or horsehair, dyed in the gayest colors. Frequently the plume was triple, as in Figure 40, or flanked by other plumes, as in Figure 42; at times it represented the horns of some animal, as in figure 44, and generally a horsetail streamed from the lower part of the crest. A small round shield,

painted in brilliant colors, often emblazoned with peculiar devices, completed the armor of the Greek cavalry.

The tactical unit was the ile of sixty-four men, two of which composed an epilarchy, four a tarantinarchy, and eight a hipparchy of five hundred and twelve men. Two of the latter constituted an ephipparchy, four a telos, and eight an epitagma of four thousand and ninety-six men. The formation of the ile was sixteen in front and four deep, but it also formed on eight ranks of eight in front. The intervals between the iles were equal to half their front. They sometimes charged in line, but generally in oblong wedge-shaped columns, whose edge was driven against the enemy's line for the purpose of penetrating and forcing its way more easily through it. Sometimes two of these triangles were formed together in the shape of a lozenge, as in Figure 45, in which the ▯ represent the soldiers, and the ♔ the chiefs.

Fig. 45.



These triangular and lozenge formations, the invention of which is attributed to Philip of Macedon, were heavy and

unwieldy, lacking the very first of all qualities in a good cavalry—speed. Their bulkiness, moreover, made them a broad target for the enemy's arrows, stones, and javelins, from which it must have been difficult for them to escape. Notwithstanding this, the Greeks employed no other than the deep order for all their troops, whether cavalry or infantry, to the time of Alexander; and the formation of the phalanx remained the basis of all others until then. Alexander, however, broke up this method, perceiving that the shallow and extended order was the only one proper for cavalry, since it allows a larger number of men to engage in action, and also enables them to move with greater speed. It was in this order that he so successfully encountered the cavalry of Darius at Arbela. From that great day, when in person he led the Macedonian horse, Alexander ranks the first of cavalry generals of all times, and the tactics there displayed were in every respect the same which now receive the sanction of modern science—sudden deployment and bold attack, outflanking the enemy's wings, reserves, dividing the enemy's forces, rallying, attacking the rear, supporting the menaced point, and to crown all, a pursuit of six hundred stadia (about seventy-five miles) in twenty-four hours. Never was there a greater achievement in ancient or modern warfare; it was the culminating glory of that splendid cavalry of Greece and Macedon, which, after the death of Alexander, gradually sank into its former insignificance.

The early Romans, poor, and lacking horses, could not be other than unskilful horsemen. They seem even to have been unacquainted with the real service of cavalry, for they hampered its action by mingling it with their infantry. Nevertheless, this method was successful as long as they contended only with the Italian nations, whose horsemen were neither better nor more numerous than their own. But when Pyrrhus and the Gauls attacked them with armies well appointed in cavalry, the

Romans, to their cost, learned its importance in battle. It was, however, chiefly during their long struggle with Carthage, that they painfully appreciated its necessity. Indeed, either nation had alternately the advantage, as the Gallic, Numidian, or Spanish cavalry fought on the one side or the other. In the first Punic war, Regulus prevailed so long as he had to contend only against the infantry of Carthage; but he was vanquished, and his army partly destroyed, partly made prisoners, the moment he encountered on open ground the enemy's mounted forces. During the second Punic war, Hannibal owed most of his successes to his cavalry; he knew how to employ it in the hour of battle, and his most brilliant victories, although not always achieved by cavalry, were constantly prepared and completed by it. Even from his Numidian horsemen, who, according to the historians, were almost the worst that could be found, and who may be compared to the Cossacks of the present day, he knew how to obtain great services. He contemned the Roman cavalry, and used to say that it appeared to him as little to be dreaded as though the horsemen were bound hand and foot. The two manœuvres which he employed with unfailing success against the Roman armies by means of his superiority in cavalry, consisted in turning their wings and attacking them in flank and rear; and secondly, in placing a corps of horsemen in ambush and suddenly falling upon the enemy's rear. The battles of the Ticinus and the Trebia were thus gained by his cavalry alone. Polybius expressly says that "the Carthaginians owe not only their victory at Cannæ, but all their earlier victories, to the preponderance of their cavalry, and thereby have given a lesson to all nations, teaching how advantageous it is to excel an enemy in that arm." The best Roman generals of that time, Fabius, Plancus, and others, were compelled to shun plains and take up their positions on hills, on account of their lack of mounted

troops. Meanwhile the Romans sought to amend their errors, and gradually established a better proportion between their cavalry and infantry. At the battle of Zama, the horsemen of Scipio amounted to one fourth of all his forces, while Hannibal's number had decreased, and was driven off; and when the victorious Roman cavalry, returning from the pursuit, attacked the Carthaginian phalanx in flank and rear, twenty thousand men were cut down, and Carthage became subject to Rome.

The Romans, like the Greeks, divided their cavalry into light and heavy, to which may be added a mixed kind, velites, who, according to Livy, were carefully trained to fight both on foot and on horseback: "Eos singulos in equos suos accipientes equites assuefecerunt et vehi post sese, et desilire perniciter ubi signum datum esset." (Lib. xxvi, c. 4.) Indeed, the Romans were ever too ready to dismount. "At Cannæ," says Polybius, "when the Spanish and Gallic cavalry, advancing from the left wing of the Carthaginians, encountered the Romans, the conflict that ensued was then indeed most warm and vehement, such as resembled rather the combat of barbarians than a battle fought by disciplined and experienced troops. For, instead of falling back and again returning to the charge, as the custom was in such engagements, they had scarcely joined, when, leaping from their horses, each man seized his enemy." Modern tacticians are puzzled to understand this strange manœuvre of the Roman horsemen, who, being armed with swords not exceeding thirteen inches in length, could have little chance in a mêlée against even indifferent cavalry; yet Roman writers assert that their troops were particularly successful in this method of attack. Light-armed infantry often mounted en croupe behind the horsemen, and, when they approached the enemy, leaped down and fought in the intervals of the squadrons. The Roman cavalry used no saddles,

but their horses had leathern housings, sometimes strengthened about the head and breast with iron scales or plates.

The dress of the Roman cavalry consisted of a cloak reaching to the knee, under which they wore a tunic. The breeches were of leather, and extended to the calf of the leg, which was

F.g. 48.

Fig. 47.

Fig. 46.

Fig. 49.

Fig. 50.

covered with greaves or half boots. In winter they also used a cloak with a hood to protect the neck and head. They wore beards, but their hair was invariably cut short. Their armor was at first simple, but afterward much resembled that of the Greek cavalry. The lances and javelins were shorter, but the swords, thirteen inches long, had broader blades with points, were very sharp, and designed both for cut and thrust. They were worn on the right thigh, suspended from the

shoulder by a belt; see Figure 46. Under Vespasian the sword was removed to the left side, and its place supplied by a large dagger. The bow was similar to that of the Greeks. The helmet was originally of leather studded with metal, and very simple in form, with neck piece and crest, as in Figure 47. Afterward it was made entirely of metal, and was often very splendid; the crest was decorated with an erect plume, generally of purple feathers, sometimes also with a red comb or tuft of horsehair; it had a neck piece and cheek pieces, but no visor; see Figure 48. The cuirass was at first called corium or lorica, because composed wholly of leather or of leathern straps, named lorei. Subsequently, when nothing but metal was used, it was termed thorax, pectorale, and cataphracta, in imitation of the Greek. The cuirasses were variously and in many cases very splendidly adorned. Figure 49 represents the cuirass of a general officer, richly inlaid with gold and embellished with purple trimming. Figure 50 is the lorica leminiscata, worn by the common soldiers, and formed of bands of metal overlapping each other horizontally. Like the Greek, the Roman cavalry carried a small round buckler.

The arms of the allies differed very considerably in form from those of the Romans. Figure 51, on next page, represents an Etruscan helmet, fashioned nearly after the Grecian model; Figure 52 a cross-plated Etruscan cuirass. Figure 53 is a Samnite leathern cuirass with metal neck band or ring collar; and Figure 54 a Samnite leathern metal-plated helmet, distinguished by a close protection for the face, which, among the Romans, was always uncovered. This is evidently the prototype of the knight's helmet of the middle ages. The armor of the other allies, though varying in minute details, was generally only a modification of the above.

Of the details of Roman cavalry, in its earliest stage, we have very imperfect accounts. Yet we know that Romulus

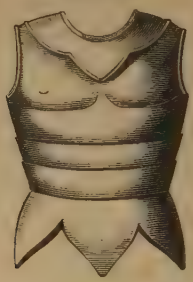
divided his people into three tribes, each of which was required to furnish a thousand men for foot soldiers and a hundred for horsemen, and thus originated the first Roman legion, com-

Fig. 51.

Fig. 52.

Fig. 54.

Fig. 53.



posed of three thousand infantry and three hundred cavalry. In addition to these, there were three hundred horsemen, called celeres, who formed the king's body guard. Numa Pompilius disbanded this corps, but it was reorganized by Tullus Hostilius, and increased by the addition of three hundred noble Albans. This number was again doubled by Tarquinius Priscus, and under Servius Tullius it grew to two thousand four hundred men. The cavalry was the most respectable part of the Roman army, especially while it consisted exclusively of knights, which class of citizens was held in high esteem throughout the nation. Even before the regular establishment of the equestrian order in all its privileges, which occurred 124 B. C., the cavalry was composed chiefly of the noble and respectable young Romans; for at its earliest origin, when it was first organized by Romulus, none

but the most noble youths were received among his celeres. Toward the end of the republic, the Roman knights began to withdraw from military service, and, as a consequence, the cavalry of the later armies consisted almost entirely of foreigners, who were hired in the provinces where the legions were stationed. The knights of these times served only among the Prætorians, or in the imperial body guard.

The number of horsemen connected with a legion varied from three hundred to four hundred, and the proportion of cavalry to infantry was always larger with the allies than with the Romans themselves. This number was divided into ten turmæ and thirty decuriæ. Each turma had three decuriones, the first of whom was the officer commanding. Some authors have omitted these three officers from their computation, and have thus created confusion respecting this organization. Gibbon, however, presents the facts very clearly and satisfactorily in the following details of the number of cavalry attached to an imperial legion. "The cavalry," he says, "was divided into ten troops or squadrons. The first, as the companion of the first cohort, consisted of one hundred and thirty-two men, while each of the other nine amounted to only sixty-six. The entire establishment formed a regiment, if we may use the modern expression, of seven hundred and twenty-six horses, naturally connected with its respective legion, but occasionally separated to act in the line, and to compose a part of the wings of an army." This, moreover, perfectly corresponds with the statement of Vegetius, who expressly says: "His decem cohortibus legio plena fundatur, quæ habet pedites sex millia centum, equites septingenta viginti sex." Thus the turma, officers included, consisted of thirty-three. Four turmæ, therefore, must have constituted the cavalry of the first cohort, and two of each of the remaining nine, in all twenty-two turmæ for an imperial legion.

The turmæ were formed in various manner; originally in eight files and four ranks, as in Figure 55; afterward in three sections of three files on three ranks, each section commanded by its decurio, and followed by its uragus or file-closer, as in Figure 56; at a later period still, in ten files and three ranks, and commanded by the first decurio, the two others one on either flank, as in Figure 57. The usual formation of the legion, its order of battle, and the place occupied by the cavalry

Fig. 55.

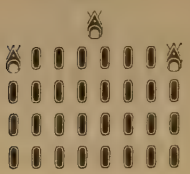


Fig. 56.

Fig. 57.

as reserves behind the infantry, led them to prefer the small turma of thirty-two men, to the Greek ile of sixty-four, on account of its greater mobility. When the enemy's infantry was shaken, and cavalry was needed either for the charge or pursuit, these small squadrons could much more easily advance through the rectæ viæ, or intervals between the maniples, and more safely effect their retreat, in case of disaster. Each interval was equal to the breadth of a maniple, and the latter were generally drawn up in three lines, checkerwise. In open order of battle, the cavalry always took position in the rear of the infantry; but when the maniples of the second line moved in, and thus formed one unbroken line, the cavalry then occupied the flanks. At the battle of Pharsalia, Pompey united, for the

first time, four turmæ into one, in order to impart greater strength and solidity to his squadrons; but he allowed himself to be anticipated in the attack, and consequently his cavalry, though superior to that of Cæsar, was defeated.

The many defeats which the Romans suffered in their wars with Hannibal, may undoubtedly be ascribed to the superiority of the latter's cavalry, although the lack of ability in their own generals also contributed to this result. Scipio lost the battle of the Ticinus by his imprudence in attacking, without any support, a body of cavalry superior to his own both in numbers and in discipline. Sempronius fell into the ambuscade which Hannibal had prepared for him at the Trebia, from his unpardonable neglect to reconnoitre the country in which he was about to be engaged. Flaminius, notwithstanding the disaster of his predecessor, fell a victim to the same want of precaution at the Trasimenus; and Varro, at the battle of Cannæ, became an easy prey to the artifice of his more subtle adversary. Here the Romans had eighty thousand infantry and six thousand cavalry; the Carthaginians, forty thousand infantry and ten thousand cavalry. If Varro had skilfully used his superiority in numbers to extend his line and outflank Hannibal, instead of forming his legions into deep masses, thus diminishing his front, the result of the conflict would in all probability have been a splendid victory for him. The conduct of the Roman consul on this occasion is inexplicable. Completely deceived by the simulated retrêat of the wily Carthaginian, whose inferior numbers warranted no expectation of success save by stratagem, Varro not only allowed his centre to advance into the very heart of the enemy's line, but weakened his flanks to support it, until, at last, the whole of his numerous legions were caught in the snare so artfully laid for them. The carnage was dreadful. Never was the destruction of an army more complete. Polybius gives the loss of the Romans at seventy

thousand; of their cavalry only seventy escaped. The Carthaginians lost scarcely six thousand, most of whom were of the Celtic contingents, that had borne the first brunt of the battle. Hasdrubal's regular cavalry, which had contributed most to the victory, lost only two hundred in killed and wounded.

It has never been well ascertained whence the Carthaginians derived their knowledge and skill in cavalry tactics; but as Hannibal was familiar with Grecian civilization, and as Greek mercenaries and officers of fortune had even before the Punic war served in the Carthaginian army, it is generally believed that the regular cavalry of Carthage was mainly copied from that of Greece and Macedon. The Numidian horsemen were irregular; their horses were small, thin animals, which they rode without saddle or bridle, managing them with only a thong of leather or a whip. On the Trajan column, the Numidian horsemen are represented as almost nude, having no covering but a small mantle like a Capuchin's, without offensive or defensive arms, and destitute of every reasonable claim to the name of cavalry. Montfaucon, in explaining one of the figures representing a horseman mounted on a small horse, from which a Roman soldier is dragging him by the hair of his head, remarks: "We should not be astonished that a tall man on foot could have taken a Numidian horseman by the hair, for the Numidian horses, says Strabo, are small; they are, however, very swift, and so docile that they may be guided by a switch alone; some, even without being tied, follow their master like a dog."

That the Numidian cavalry managed their horses without bridles is confirmed by Polybius, who, in describing the order of the battle at the Ticinus, expressly states that "Hannibal threw into the centre of his line all the bridled and heavy cavalry, and placed the Numidians on the wings, that they might be ready to surround the Romans." By some of the

ancient writers the Numidians are called "gens inscia freni," from their ignorance of the bridle, which, indeed, appears to have been common to all the African nations. Claudian informs us that they used javelins; the unarmed figure, therefore, on the Trajan column, must be supposed, as Montfaucon suggests, to have lost his arms in the struggle.

The Gallic cavalry was one of the most efficient of Hannibal's auxiliaries. This great captain had trained them with the utmost care, in order to use them in line with the Spanish horsemen, which his father, his uncle, and himself had organized and instructed, it is said, according to the principles and practice of the Greek cavalry. The Gauls speedily acquired such skill in this arm, that they surpassed even the Greeks themselves. Strabo says of them: "They are all born warriors, but their cavalry is far superior to their infantry, and forms the best part of the Roman cavalry." At the time of Arrian, all the terms of the riding school were Gallic. From their connection with the Roman army, they soon adopted the cataphractæ, and it is very probable that these steel-clad men were the immediate exemplars of the knights of the middle ages; for the Franks, when they invaded Gaul, had little cavalry, and we know how readily they conformed to the superior civilization of the conquered, with whom they quickly coalesced, and both became one homogeneous people. Like the Greeks and Romans, they had no saddles, which date only from the reign of Constantine; nor stirrups, which were invented by the Franks. Before them, the horsemen rode their horses barebacked, or were seated on leathern or fur-covered pads; their legs hung unsupported, and hence cases of hernia and diseases of the limbs were very common, until diminished by the general introduction of saddles and stirrups.

Until the removal of the seat of government to Constantinople, the army of the Romans ranked first throughout the

world, but with that event began the decline of their military art and glory. The ten centuries which intervened between the fifth and the fifteenth are but a long night of misty darkness, only occasionally lit by sparks from the knightly sword. Military art was of small account in times when personal valor and physical strength achieved everything; when national struggles and battles were nothing but hand-to-hand encounters on a stupendous scale, gigantic duels fought with more or less of pageantry and disorder. The Franks had vanquished the Gauls with their redoubtable infantry alone, and therefore cavalry, of which they had but little, received slight favor at the beginning of their monarchy. Nevertheless, at the battle of Tolbiac, A. D. 496, Clovis fought at the head of his cavalry. Thierry and his brother Clotaire employed horsemen in the battle which they won against Hermanfred, king of Thuringia, A. D. 531, as also did Theodebert in his expedition against Italy, A. D. 537, and Friedegond at Soissons, A. D. 597. At the battle of Tours, A. D. 732, the Franks numbered twelve thousand cavalry. But from the moment when they incorporated into their own army the Gallic cavalry, thus acknowledging the necessity of blending this formidable power with their own forces, the Gauls, whose pride had ever been in their intrepid horsemen, at once felt themselves the equals of their conquerors. Under Pepin, A. D. 768, the cavalry was greatly increased, and with Charlemagne it outnumbered the infantry. Toward the end of the second dynasty, and at the beginning of the third, cavalry became almost exclusively the basis of the French armies, not from military policy, but as a necessary consequence of the constitution of the state. There was an unwillingness to intrust, in any degree whatsoever, its defence to the lower classes, who, being either serfs or slaves, were deemed incapable of national spirit. That duty, therefore, devolved solely upon the nobility, as they alone were in-

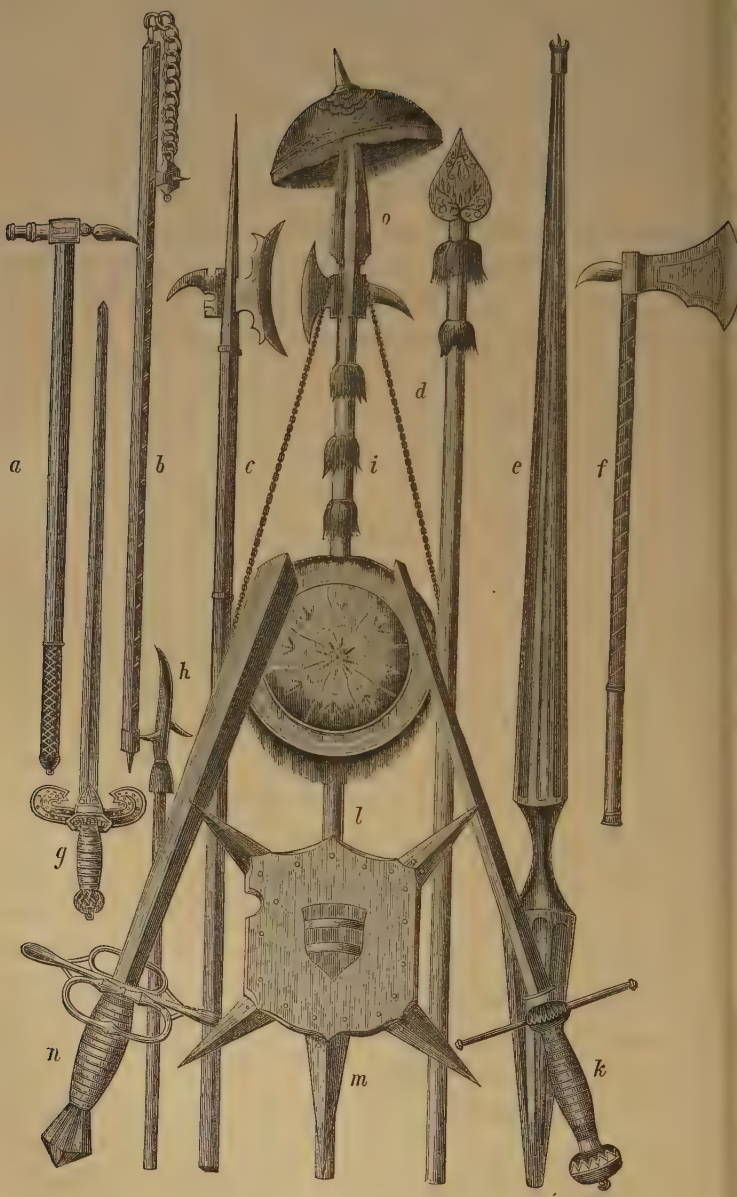
terested in its power and its honor; but Roman traditions had left too deep a trace for them to deign to fight otherwise than on horseback; and such is the origin of the chevaliers or knights.

Before proceeding further, let us pause for a while to examine, in some detail, the military dress and arms of this extraordinary and interesting period. The armorer's art was in high repute during the middle ages, and the skill therein displayed has never been surpassed. Even in the fifth century the Goths had shields inlaid with gold and silver, and the swords of the Vandals were often masterpieces of workmanship. In northern Italy, especially, this art attained consummate perfection, and the designs of inlaid work, principally arabesque and leafwork, there executed, still serve as paragons of skill.

The lance was the prime weapon of the knightly equipment. Its staff was of fir, oak, linden, sycamore, or ashwood, and often richly carved and decorated. It tapered toward the point, and at the lower part, where it was clasped beneath the arm, it was hollowed out. The head for war use was about one foot long, and very stout and heavy; the lance for tournaments and tiltings had, in lieu of a head, merely a steel knob, with three points, to prevent its slipping from the mail plate; see Figure 58, *e*, page 288. As the armor was almost impenetrably strong, the lance usually broke at the first shock; hence the phrase "to break a lance," which in tilting was synonymous with "entering the lists," and which in a figurative sense remains in the language, signifying "to stand up for any one, to fight his battles." In later times the knight banneret bore his banner on the lance.

As early as the beginning of the French monarchy, and especially during the third dynasty, the use of the lance was confined to freemen. In the laws of William the Conqueror concerning the enfranchisement of serfs, we read, "tradidit illi

Fig. 58.

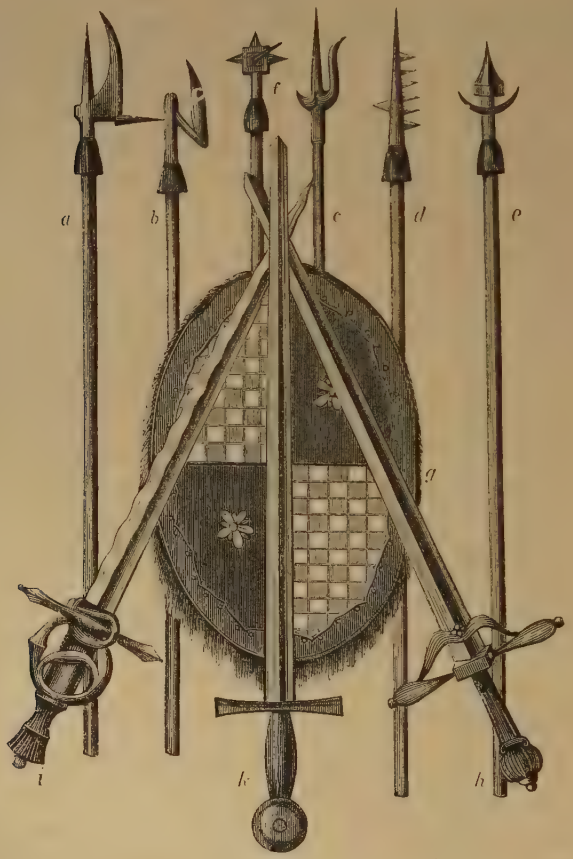


arma libera, scilicet lanceam et gladium." This was the Norman law, substantially copied from that of France. In the capitularies of the second dynasty, serfs were positively forbidden to use the lance. However, in consideration of the great superiority of this weapon, the lords finally granted their vassals the right of using, in time of war, a species of lance or pike. A special condition required that it should be smoked (enfumée), that is, remain rusty and unburnished; and when hostilities had ceased, it was by law placed over the mantlepiece, exposed to smoke and soot, lest the vassals should grow too proud. For the same reason the sword was left to rust in its scabbard, and to this day, in France and other European countries, the old rusty gun occupies its place above the peasant's mantle, as the smoked lance did in the feudal days of his remote forefathers. At first this lance had only a single head, like that of the hunting spear, leafshaped and usually ornamented with a pair of tassels, as in Figure 58, *d*; afterward the form of the head was altered, and one or two hooks were added to catch the meshes of the hauberk, that thus the wearer might be pulled down; see Figure 58, *h*. Later still, other improvements were devised, according to individual taste or the fancy of the village blacksmith, and thus originated the strange forms of weapons called bisarms or gisarms, of which Figure 59, *a*, *b*, *c*, *d*, *e*, on page 290, will furnish some idea.

Often an axe was added to the pike, and thus originated the halberd or partisan, which, even to the close of the last century, remained in use as a distinctive badge among the officers of infantry. The head of this weapon was either that of a knight's lance, as in Figure 58, *c*, or a broad, dagger-shaped, two-edged blade, as in Figure 58, *i*, below which was a round or a crescent-shaped axe on one side, and a point or hook on the other. The addition of the axe to the lance was evidently suggested by the battle axe, which never entirely passed out of

use, and of which we see a specimen in Figure 58, *f*, called the Danish axe. In the thirteenth century it dwindled to a mallet or martel, which was hurled at the enemy; see Figure 58, *a*; it was carried by the knights at the saddle bow or in a belt. To this class of arms belong also the mace; the morgenstern (morning star) of the Germans; the goeden dag (good day) of

Fig 59.




the Flemish; &c. Figure 58, *b*, represents a morgenstern as used by the Swiss at the battle of Mortgarten, and Figure 59, *f*,

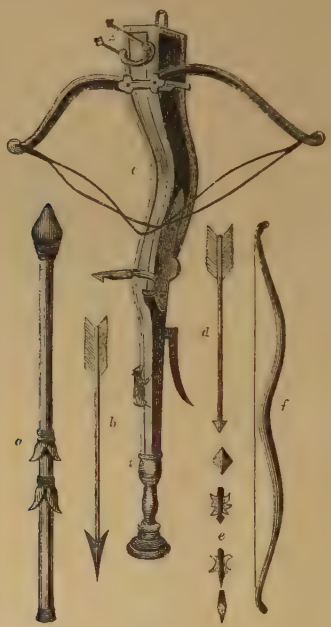
the goeden dag with which the Flemish made such havoc at the battle of Courtray, in 1302.

The swords in the middle ages, of which *n*, *k*, in Figure 58, and *i*, *k*, *h*, in Figure 59, are specimens, also merit attention. The blades were long and heavy, and sometimes rounded at the point, but generally cut off at an obtuse angle, showing that they were designed for striking, not for thrusting. Figure 58, *n*, represents the sword once worn by John George I of Saxony ; it is five feet long : *k*, in the same figure, is that of Henry the Pious ; its length is nearly six feet. In consequence of their great weight, these swords were wielded with both hands ; the hilt was therefore proportionately long, and had a heavy pommel, which, like the hilt and the cross guard, was often richly decorated. At a later period we find swords whose edge was straight on one side and waved on the other, as in Figure 59, *i* ; sometimes, also, the blade was flamed on both sides, and elegantly wrought. In addition to these heavy swords, the French had a smaller one, merely for thrusting, which they styled estoc, and of which Figure 58, *g*, shows a sample. The Germans soon adopted these, and called them panzerstecher. In France they were also termed rapière, which name, at first given ironically, finally became their general denomination throughout Europe.

The single bow, Figure 60, *f*, which in northern Europe remained longer in use than elsewhere, gradually yielded to the crossbow, which as early as the twelfth century had almost entirely superseded it. This was palpably suggested by the balista, which, even in ancient times, was often light and portable. Richard I introduced them into England, and in the third crusade they were very commonly used. The crossbow represented in Figure 60, *c*, shows the earliest form. The bow was of spring steel, and the string, usually double, was made of twisted gut, wound with silk or thread. A small windlass drew

back the string, which was caught and held by a claw. A trigger raised this, and the string recoiling, propelled the arrow with considerable force. At first the arrows were of the ordinary kind, feathered at the notch with leather or parchment, as in *b* and *d* of the same figure; later, when more powerful springs were used, heavier bolts were discharged, such as are represented in *a*, the weight of which in many instances even exceeded a pound. These bolts were sent with much precision, and so destructive was their effect, that at a great distance they penetrated light cuirasses, and transfixed the unarmed. They were tipped with heads of various forms, some of which may be seen under *e* in the same figure.

Fig. 60.




The shields of the middle ages were of the most varied shapes, square, round, oval, triangular, indented, curved, convex, flat, with all their manifold modifications. Frequently

they were furnished with heavy iron spikes, to render them offensive as well as defensive arms; see Figure 58, *m*. Such shields were allowed even in the ordeal by combat, but at such times the length of the points was limited to one foot. The shields of the foot soldiers were large, and generally bore the arms of the liege lord, as in Figure 59, *g*. After the first crusade, round shields, copied from the Saracens, gradually became the fashion. Those worn by the knights were small and usually flat vaulted, as in Figure 58, *l*; sometimes, also, high vaulted with a boss, as in Figure 58, *o*. Some of them were profusely ornamented, and inlaid with gold and silver; those used on state occasions were often made entirely of precious metal, richly chased and artistically wrought. The inside was padded, and lined with cloth or velvet, generally with fringed edges.

After the shield, the helmet is the oldest defensive armor. Procopius and Sidonius Apollinaris maintain that it was not used under the kings of the first Frankish dynasty, and as the latter was born at Lyons, A. D. 430, his statement claims our regard. Very probably, however, it applies only to the common soldier, for the first crown of France was a helmet. Dagobert, King of Austrasia, we are informed, was wounded on the head by a blow which pierced his helmet; and even before his time, Clotaire II, King of Neustria, at his meeting with the duke of the Saxons on the Weser, is spoken of as "taking off his helmet and unrolling his mass of splendid locks." If, then, the helmet was not in common use, it certainly was worn by the chiefs. It passed from them to other warriors, and under the second dynasty we find it in general use. At first it had a protection only for the nose, leaving the cheeks and eyes exposed. Toward the middle of the twelfth century, however, the visor was occasionally added, and in the third crusade had become a customary part. Originally it consisted of cross bars riveted firmly to the helmet.

Afterward plates, moving on hinges, were substituted, and thus, by gradual improvements, the helmet became at last the most superb piece of the whole suit of armor; see Figures 61 and 62. As these helmets were heavy, they were worn only for actual combat, and at other times carried by one of the knight's attendants. These used pots or skullcaps, such as are represented by Figures 63 and 64; and similar headpieces, but more elegantly formed, were worn by the knights themselves, when not expecting an immediate engagement. The helmets were as costly as the shields; some were wrought of steel, inlaid with gold and silver; some were entirely of precious metals; others again were set with precious stones.

Fig. 61.

Fig. 62.

Fig. 65

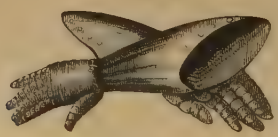


Fig. 63.

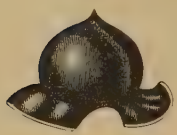


Fig. 64.

Kings wore crowns upon their helmets, counts and barons coronets, according to their rank; and later, when heraldic bearings had been adopted, they also were added to the helm and formed the crest.

The solid plate cuirass, which the Romans introduced into Germany, never extensively prevailed there. The French, during the first dynasty, had none. Gregory of Tours, however, often speaks of a defensive armor, consisting of a coat of mail wrought of iron rings interlinked and fastened on a leathern undercoat, which covered the body from the neck to the hips. This was afterward lengthened, and covered the thighs also, reaching below the knees, where it was attached to leggings of the same kind. Finally these hauberks, as they were called, formed a single piece, and were drawn upon the body as a pair of overalls. These ring cuirasses, as represented in Figure 66, continued long in use. Among the Normans they were very general, and the monuments of the fourteenth century, especially the tombs, exhibit the hauberk in all its various forms.

Fig. 66.

In Germany, and more particularly in its northern provinces, the cuirass was of leather, strengthened by several overlapping layers, cut in the shape of scales, and sometimes studded with metal. The latter gradually predominated, until at last nothing was used but metal scales fastened with wire on the leathern undercoat. A fine specimen of this kind of scale

armor is seen in Figure 67, the original of which is in the Dresden armory, and is said to have belonged to King John Sobieski of Poland. The helmet and cuirass are similarly

Fig. 67.

wrought, and the single round headpiece, as well as the absence of a visor, shows it to have been one of the first cuirasses fashioned in that style.

Meanwhile the improvements in crossbows, the increased skill of the combatants, and their extraordinary feats of strength, rendered both ring and scale cuirasses insufficient to withstand the effects of bolts and mallets and the terrible swordcuts of the stout and valiant knights. The need of a stronger protection, therefore, compelled a gradual return to the solid plate armor of the ancients. This was soon surpassed in solidity, combined with so pliant a flexibility as not in anywise to hamper the free motion of the limbs and joints. At first the plate cuirass was worn over the hauberk as an additional protection, but gradually it superseded it, and toward the reign of Philip the Fair, A. D. 1285, had become quite common in France, where, according to Froissart, fifty years later, under Philip of Valois, no other was worn ; see Figure 68.

In the cuirass of later times especially, great magnificence was displayed. It vied in richness both of workmanship and material with the helmets and the shields. Under it was worn

Fig. 68.

a quilted jerkin of broadcloth, velvet, or silk, and where the several pieces of the armor came together, it was lined with elegantly scolloped and finely colored leather or cloth. The gauntlets, also, of which Figure 65 presents a specimen, were often very beautiful. The cuffs were of metal to protect the arms and the wrists. The hands and fingers were made of stout but soft leather, covered with plate and scales not unlike the lobster shell, and as richly wrought and decorated as the rest of the armor.

The horses, too, were covered with scale and ring mail. The chanfrain or charfron, as the English called it, was generally of steel plate, often with a projecting spike in front. It was especially on these head coverings that the most profuse expenditure was lavished. At the siege of Harfleur, Count Saint Pol had a chanfrain that cost thirty thousand dollars,

and that of Count Saint Foix was valued at fifteen thousand. Both were inlaid with gold and precious stones. The full suit of armor not unfrequently cost a fortune. The different pieces composing it were called "bards." Although the horses were well protected, they were nevertheless much less invulnerable than their riders; consequently the attack was directed mainly against them, and we have already seen the terrible contrivance, called bisarms or gisarms, used by the foot soldiers to hack their legs. When horse and rider were overthrown, the latter was assailed with mace and axe and heavy stones, as we would now proceed to demolish a turtle. After having been thus bombarded like a fortress, he often arose, when delivered by his companions, with only slight bruises caused by his fall, or with some trifling indentations of his armor. Indeed these knights were hard to kill, and according to Philippe de Comines, it required three or four men to crack one open. "Presque touts les valets avoient haches à couper bois, dont ils rompirent les visières des armes, et leur en donnoient de grands coups sur les testes; car bien mal aisez estoient à tuer, tant estoient fort armez: et ne vis tuer nul, où il n'y eut trois ou quatre hommes à l'environ." Figure 69 exhibits a complete plate mail equipment for man and horse. It represents the state equipment of Christian I, Elector of Saxony. It is of polished steel, richly engraved and inlaid with gold. The original is preserved in the Dresden armory.

Clumsy, as these panoplied knights appear, we would greatly err if we believed them to have been really so. The constant exercise to which they were inured from childhood, developed in them a muscular power and a dexterity scarcely conceivable by us. The following extract from the life of Jean le Maingre, Sire de Boucicaut, Marshal of France, will give us an idea of the gymnastic course through which these gentlemen were obliged to pass. "Il s'essayoit à saillir sur un coursier

tout armé; puis autre fois couroit et alloit longuement à pied pour s'accoustumer à avoir longue haleine, et souffrir longue-

Fig. 69.

ment travail; autre fois ferissoit d'une coignée ou d'un mail grande pièce et grandement. Pour bien se duir au harnois, et endurcir ses bras et ses mains à longuement férir, et pour qu'il s'accoustumast à légèrement lever ses bras, il faisoit le soubresaut armé de toutes pièces, fors le bacinet, et en dansant le faisoit armé d'une cotte d'acier; sailloit, sans mettre pied à l'étrier, sur un coursier armé de toutes pièces. A un grand homme monté sur un grand cheval, sailloit de derrière à chevauchon sur ses epaules, en prenant ledit homme par la manche à une main, sans autre avantage. En mettant une main sur l'arçon de la selle du grand coursier et l'autre emprès les oreilles, le prenoit par les creins en plein terre, et sailloit par entre ses bras de l'autre part du coursier. Si deux parvis de plastre fussent à une brasse l'une près de l'autre qui fussent de la hauteur d'une tour, a force de bras et de jambes, sans

autre aide, montoit tout au plus haut, sans cheoir au monter ne au devaloir. Item, il montoit au revers d'une grande échelle dressée contre un mur, tout au plus haut sans toucher des pieds, mais seulement sautant des deux mains ensemble d'échelon en échelon armé d'une cotte d'acier, et osté la cotte, à une main sans plus montoit plusieurs échelons. Quand il estoit au logis, s'essayoit avec les autres écuyers à jetter la lance ou autres essais de guerre, ne ja ne cessoit." ("Le livre des faicts du Maréchal de Boucicaut.")

This course of physical training was combined with a strict and severe moral education. "Seven are the virtues," says Lancelot du Lac, "required in a true knight, three of which are theological, viz., faith, hope, and charity; and four cardinal, justice, prudence, force, and continence." The following lines, referring to the knight's moral character, are too interesting, and form too fine a counterpart to the preceding extract, to be omitted here.

Vous qui voulez l'ordre de chevalier,
Il vous convient mener nouvelle vie;
Devotement en oraison veillir,
Péchié fuir, orgueil et villenie:
L'église devez deffendre,
La vefve, aussi l'orphenin entreprendre;
Estre hardis et le peuple garder;
Prodoms, loyaultz, sanz rien de l'autrui prendre:
Ainsi se doit chevalier gouverner.

Humble cuer ait, toudis doit travailler,
Et poursuir faitz de chevalerie,
Guerre loyal, estre grand voyagier,
Tournoiz suir et jouster pour s'amie:
Il doit à tout honneur tendre,
Si c'om ne puist de lui blasme reprandre,
Ne laschetés en ses œuvres trouver;
Et entre touz se doit tenir le mendre:
Ainsi se doit gouverner chevalier.

Il doit amer son seigneur droiturier,
Et dessus touz garder sa seignourie;
Largesse avoir, estre vray justicier;
Des prodomes suir la compagnie,
Leurs dis ouïr et aprendre,
Et des vieillards les prouesses comprandre
Afin qu'il puist les grands faiz achever
Come jadis fist le roy Alexandre:
Ainsi se doit chevalier gouverner.

Such, in the main, was the code of morals by which the ancient knights were governed, and it may well be doubted whether, as a class, there ever lived men more worthy of our respect than these mediæval warriors. They cultivated honor with enthusiastic ardor, and their influence in this respect has been incalculable on the moral tone of society and of modern armies. They loved conflict, but ever fought for principle or opinion, and were faithful to it; and the more adventurous their object, the greater was their qualification. Religion, which found in them its boldest champions, was one of the most powerful influences which animated them. Loyalty and friendship were sacred in their esteem; even the colors of their lady-loves proved the strongest stimulants to valor. At other epochs, men have been effeminated by tender attachments, and deemed it their duty to remain with those whom they loved, but the affection of the knight inspired him otherwise; the intensity of his devotion inflamed him to bolder deeds of perilous achievement. Tacitus remarks of the Germans: "In the hour of danger, it was a disgrace to the chief to be surpassed in valor by his companions; a disgrace to his companions not to equal the valor of their chief. To survive his fall in battle was indelible infamy. To protect his person, and to adorn his glory with the trophies of their exploits, were the most sacred of their duties. The chiefs combatted for victory, the companions for

the chief. The noblest warriors, whensoever their native country was sunk in the inertness of peace, maintained their numerous bands in some distant scene of action, to exercise their restless spirit, and acquire renown by voluntary dangers." Such were the warriors of the Teuton forests then, and the knights of the middle ages had in nowise degenerated from the manliness of their forefathers.

Jousts and tournaments, whose origin is lost in the darkness of the middle ages, were the great schools where, in time of peace, the knights prepared themselves for actual warfare. In these they fought with blunted weapons, in the very gaze of the ladies, who rewarded the brave with prizes, such as ribbons, scarfs, and cuffs, embroidered by their own delicate fingers; but the bravest of the brave was honored with a kiss. Thus was that courage formed, which never calculated the numbers of the enemy, but regarded only duty, or the ambition of valor; and hence arose that equanimity in the greatest and most appalling dangers, that insensibility to bodily pain, those warlike virtues, which the men of after ages can only view with wonder, without possessing strength of will to exercise them in their own persons. With regret we relinquish a subject so rich in interest, but its further development would draw us too far from our purpose; we therefore refer the reader for more graphic and ampler details, to Sir Walter Scott's "Ivanhoe," in which Prince John's tournament is described with a vividness of coloring, and a fidelity to truth, that reanimate the scene, and bring the actors living before our very eyes.

Tactics were unknown among the early knights. Their formation for battle was very simple: they drew up in a single rank, every knight sought out his opponent, and rode against him with couched lance, in order to hurl him from the saddle, or make him prisoner. The esquires, or armor bearers, followed as a species of second rank, or assistants to their knights,

whom they aided in battle, bringing them fresh arms and other horses, when the former became unserviceable and the latter were injured. Originally, the esquires took no direct part in the battle; animated, however, by a noble desire for glory, they sought opportunities to distinguish themselves, that they might obtain the honorable order of knighthood, by some gallant and brilliant exploit. Thus, if the enemy escaped, or overcame the knights in the first rank, he surely fell into the hands of these brave youths, whose emulous desire of glory impelled them to the most brilliant actions.

In addition to these esquires, the knights were attended by chosen vassals, also mounted, and equipped with maces, battle axes, and sometimes with leather cuirasses, and who were serviceably employed in various ways. The slowness of the march, and the time required by the knights to prepare for battle, rendered the use of scouts necessary, in order to give timely notice of the enemy's advance. This part of the knight's suite, therefore, formed a light cavalry, which was used to scour the country, to harass the enemy, and to pursue him after defeat. To this description of soldiery belong the men Philippe de Comines refers to, when he states that it requires three or four to kill an unhorsed knight with axes. In his time, however, they had assumed some organization, but originally, they were the very worst of irregular cavalry, though much resembling the rest of the army, where every one marched as he pleased, or as he could. The columns resembled large droves of cattle; and on meeting the enemy, much time was lost in forming and preparing for battle. Such was cavalry in the middle ages.

It would be exceedingly interesting to follow the progress of cavalry through all its stages in the various countries of Europe, during this period; but from the limits of our work, we must be satisfied with only noticing its gradual improvement in general terms. In the infancy of chivalry, every one

who could afford to keep a horse, was, so to say, a knight; but as society advanced, this rank became important, and those who aspired to the distinction were obliged to attend on those who had actually attained it. They carried the shield and armor of the knight until he reached the field of battle, and hence they were called armigeri, scutiferi, or escuyers. Such was the state of things during the eleventh, and even the twelfth century. In the thirteenth, however, the duties of a more menial kind, previously discharged by the esquires, devolved upon the page, or other attendant; and the service of bearing the shield and chief armor of the knight was performed by esquires only on occasions of state, and at tournaments; and such continued to be the practice until the beginning of the seventeenth century. All those not personally in attendance upon the knight, were disposed in battle according to the orders of the commander of the army, or of his marshal; and although the esquires and pages accompanied the knight at the muster and on state occasions, yet, when they met the enemy, they served in that part of the army to which they were assigned, and under the orders of whatever officer had been appointed to command them. This clearly appears from many ordinances decreed by the kings of France, and especially from the following, of Henry VIII of England, "For a retenue of speres or men at armes," preserved in the Cottonian library. The first article of this decree prescribes that "Every of the said gentilmen shall have his harness complete, and all other habiliments mete and necessary for him, with two double horses at the leeste for himself and his page, convenient and necessary for a man of arms; also his coustrell, with a javelin or demye-launce, well armed and horsed, as it appertayneth. And theye shall obeye in every condicion, the captain that shall be ordeyned and deputed by the king's highness, or his deputie-lieutenant, to have the rule, conduite, and gov'nance of the men, in all

things that they shall be commanded to doo in the king's behalf." In England the men composing the heavy cavalry were styled men at arms, and those who served in the light cavalry hobilers, from their riding small horses called hobbies. Under Henry VIII the men at arms began to take the name of lancers, and the hobilers, demi-lancers.

All these laws and regulations, which, with but slight differences, were substantially the same throughout Europe, point to a new era in military history. They refer to the organization of standing armies, consequent upon the great change in warfare, effected by the application to projectile engines, of gunpowder, whose invention has been erroneously ascribed to a Franciscan monk named Berthold Schwartz, who lived in the early part of the fourteenth century. Long before him another monk, Roger Bacon, in his "Epistola de secretis operibus naturæ et artis, et de nullitate magiæ," speaks of gunpowder as well known, and employed for the purpose of pyrotechnic display. "Thus," he says, "we may imitate thunder and lightning; for sulphur, nitre, and charcoal, which by themselves produce no sensible effect, explode with great noise when closely confined and set on fire." Dutens supposes that Bacon derived his knowledge from Marcus Græcus, who lived toward the close of the eighth century, and in a work entitled "Liber Ignium," not only mentions the ingredients of gunpowder, but prescribes better proportions of them than many works of a later date. Numerous documents may be cited to prove that gunpowder was known in the East in very remote ages; and Count Rzevuski, in his "Mines de l'Orient," gives a receipt for making it, taken from an Arabian manuscript, written in the time of the crusade of St. Louis. Some writers trace the use of gunpowder to much more distant periods. Langlès contends that the Arabs employed this composition at the siege of Mecca in 690; and the knowledge of it may have

been transmitted thence to Europe, either through the Greeks of Constantinople or the Saracens of Spain. Indeed, there is a treatise on gunpowder in the Escurial collection, written in 1249, and Sanscrit records show that it was known in China and Hindostan long before the period of historic investigation.

However this may be, it is very probable that Schwartz, who was accounted "a great naturalist and chemist," had experimented on the explosive properties of the article, and had also contributed to its use in engines of war, by the publication of his discoveries; good reason, certainly, why we should not only absolve the pious monk for his ill-reputed invention, but return him thanks for the signal benefit he conferred upon mankind, by diminishing the destruction of human life in battle, and rendering warfare less brutal, by curtailing its operations. Then, however, men felt otherwise: they were appalled by the terrors of gunpowder, the thunders of cannon intensified the awfulness of battle, and from the moment when small arms began to be employed, the downfall of cavalry was confidently predicted. For a long time the knights deemed their use in war unfair, and disdained a weapon which put the bravest man in the army at the mercy of "the most cowardly villain concealed behind the bushes." The wildest stories were current about the destructive properties of gunpowder, and Villasas relates that in 1343, when the Moors were besieged by the Castilians in Algesiras, "The iron bullets had such force, as to lop off men's limbs, as though they had been cut with a knife; and the powder which they used was of such a nature, that the wounded died instantaneously."

According to the Iconographic Encyclopædia, they had cannon in France as early as the year 1328. "These first cannon," says the work, "were called bombards, or, when very short, and with a very wide mouth, mortars. Bombards were at first of wood, bound with iron hoops, and lay upon a roller

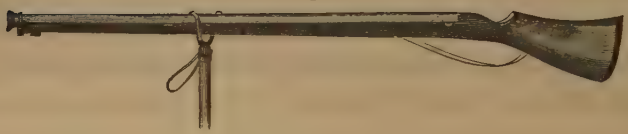
carriage; then they were lined with iron plates, strengthened by bars of iron running lengthwise with the barrel, and bound with iron hoops. But, as even this could furnish no abiding resistance to the force of the powder, they constructed them entirely of forged iron, of cast iron, and at last cast them of bronze. The first bronze cannon was cast in 1418, and they have still at Toulouse a cannon cast in 1438, which throws a seven-pound ball, and weighs 1,356 pounds. About this time, also, the movable carriage was invented, by which the gun could be aimed in any direction, and on which it could more easily be served and transported. In this manner a kind of field artillery was formed, of as small calibre even as two pounds, and with iron balls; while the huge wide-mouthed cannon, throwing stone balls, were used for sieges as late as the sixteenth century.

The next step in the improvement of firearms was the removal of the piece from its fixed stand, and the first attempt of this kind was the arquebuse. This had, instead of a carriage, a rather massive stock with a butt behind, by which it was laid to the shoulder, and in front an offset, by which it could be caught against the wall or post, so as to break the recoil. The touch-hole was at the side, instead of above, as before, and to secure the priming from falling off, a pan was placed below it; the firing was effected by means of a match; see Figure 70. As, however, proper supports were not always to be found, it was desired to render the gun still more portable and effective for field service; the stock was made yet lighter, the butt more suitably formed, and the ramrod inserted in the stock. The point of support for this still heavy weapon was furnished by a fork at the end of a staff shod with iron which the musketeer, for these weapons were called muskets, always carried with him, and set up in the earth whenever he wished to use his piece. The touch-hole and pan were on the left side, so that

the musketeer, while he held the weapon in its rest against the shoulder with the right hand, could fire it with the match which he held in his left; see Figure 71.

Fig. 70.

Fig. 71.



The next improvement was the invention of the lock. The musket had been so much lightened that the musketeer could use it, held in both hands, without the prop or rest; but as he could not manage the match with his left hand, since that was required in taking aim, it became necessary to attach it to the piece itself. For this purpose the touch-hole was brought once more to the right hand side, and a match so placed near it, that with the right hand it could be conveniently pressed down into the pan. The match holder turned upon a pin in the lock plate, and had below a prolongation, which formed the trigger, and which, when pressed downward by the thumb of the right hand, brought the match into the priming. A small spring pressed the match back again when the priming was kindled; see Figure 72. Afterward the lock was differently formed, a single slide being introduced, which caught in an offset on the match holder, and moved it so as to bring the match into the priming or push it back; see Figure 73. Meanwhile the match was perceived to be very imperfectly adapted to the purpose for which it was here employed, for if

it was not withdrawn quick enough after firing, or if its position was not exactly right, the blast of the priming with that from the touch-hole would blow off the coal and thus extinguish the match. This difficulty led to the invention of the fire-lock. The first attempt of this kind was the wheel-lock, which was suggested by the fact that flint and steel struck rapidly and forcibly together, would give out sparks capable of igniting gunpowder. A steel disk was added to the lock, which was connected with a spring in such a manner that when the spring was set and the trigger pressed, the disk made a sudden and rapid revolution; a flint was now applied by means of an addition for that purpose to the cock, so that it could be pressed against the steel disk at pleasure. The moment the lock was set in action the flint struck off small fragments from the iron disk which, being heated red hot by the friction, fell into the priming and kindled it; see Figure 74. An improvement on this lock was made by not connecting the disk immediately

Fig. 72.

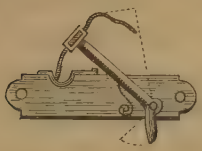


Fig. 73.

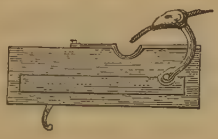


Fig. 74.

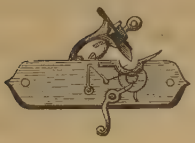
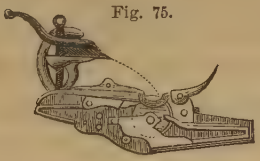


Fig. 75.



with the spring, but by means of a chain, so that the spring could open further, and the disk, performing a whole instead of half a revolution, was thus longer in contact with the flint, and thereby the firing rendered more certain. The disk was

at the same time placed higher, and was thus less liable to become foul from the burning of the powder. The cock was also provided with a spring, which, when the flint was once brought in contact with the disk, kept it there firmly during the whole revolution. The trigger was easily arranged, but the disk was wound up by a particular key for that purpose; see Figure 75.

With the invention of gunpowder commenced a new era in Europe. Not in armies and warfare alone, but in the whole civil constitution of society a total transformation was begun, which proceeded not, it is true, with startling violence, yet all the more securely. Although, at first, gunpowder was used only for heavy artillery, of which the largest armies would have but a few pieces, so that, for two hundred years after its invention, its employment was still very rare, and effected no striking change in warfare, or in modes of attack and defence; yet this change was brought about so soon as the weapon was constructed of proportions small enough to be handled by a single man. The first effect was to lighten the whole equipment. The firearm threw its shot to greater distances, and thus the long lances and swords lost all value, and were both made shorter and lighter. The common means of protection against blow and thrust, the cuirass, shield, and helmet, were no defence against the firearm, unless made very thick, when they became so weighty that they were no longer available for infantry; whereupon these, also, were laid aside. By the invention of gunpowder, victory was snatched from the hands of brute force and given to superior intelligence. The art of war, which until now had found its advantage only in superior numbers, or in the great personal strength and fiery courage of the warrior, became a science; and the most skilful usually carried away the victory from the merely brave. With this advance in the art of war, however, an unremitting practice of the same became

requisite, and warfare could be waged only by experienced people, who were familiar with the use of firearms, and with the complicated manœuvres necessary to their employment in the field; even in peace, therefore, it became indispensable to maintain a standing army."

The first organization of a standing army was effected by Charles VII of France, in 1445, and its direct result was a total revolution in the tactics of cavalry. By confining the troops to quarters, and establishing regular discipline, they were easily instructed in all that was necessary to prepare them for combined evolutions. Still the mode of fighting was not at first much altered thereby; the esquires, pages, and other attendants remained in the second line with the archers, when these were not engaged as light troops. The armed men who formed the suite of the knight, and now took the name of gens d'armes, were called servientes, servants, the original of our "sergeant." This domestic relation or attachment to the person of the knight, or homme d'armes, in course of time caused the latter to be entitled master, and until the middle of the seventeenth century it was customary, when speaking of a detachment of so many men, to call it a detachment of so many masters. They counted then by lances, that is, by squads of men, of which the knight was the leader. Charles VII divided his cavalry into fifteen companies of one hundred lances each. To constitute what was denominated a lance fournie, that is, a knight with his attendants, there were attached to the knight himself three archers, one coustillier or coustrel, so called from the large knife or cutlass with which he was armed, and one page. Thus each company had an effective force of six hundred men, all mounted, and the fifteen companies formed a total of nine thousand. In addition to these, the cavalry force also included numerous volunteers, who prized it as a great favor to be attached to this new gendarmerie. These served at

their own expense, under the hope of obtaining, at some future day, appointments as paid gendarmes. The number of volunteers thus attached to captains and other officers at times became so large, that not unfrequently a company of one hundred gens d'armes increased to twelve hundred men and horses. The gendarmes and most of the archers were noblemen; the companions were commanded by captains, under whom was a lieutenant and a guidon or ensign, always persons of the highest birth. Each company, moreover, had a quartermaster. Each homme d'armes had four horses; one for his valet, a second for his baggage, a hack or pony for his journeys, and lastly his battle horse or charger. This, along with his armor, usually remained with the company, and was mounted by him only when the enemy was signalled and battle imminent; and thus originated the now familiar expression of "mounting one's high horse," that is, showing a readiness for quarrel.

The difficulty of providing the regular pay of his forces greatly alarmed Charles VII for the success of his experiment. Moreover, he feared that the officers and soldiers, whose services he no longer engaged, would form independent corps, and that force would be necessary to disperse them. He was fortunately relieved from both these apprehensions. The towns and provinces consented to bear the expenses of the establishment, and the soldiers, not regularly engaged, were precluded from any systematic resistance to the government, by the local provosts and marshals, who posted themselves with their archers on the higher roads, and prevented a union of the disbanded troops. On the march and in garrison, the captain, lieutenant, or whoever was in command, was responsible for every disorder; and discipline was so well maintained, that its beneficial influence speedily diffused itself throughout the kingdom. Commerce began to prosper, travelling became safe, and the husbandman could thenceforth attend securely to

his business without fear of being robbed of his horses and cattle. From this return to civilization dates the decline of chivalry. The feudatories of the crown no longer summoned their vassals to service, except in cases of critical urgency; and hence the custom of banners and pennons faded away, and with it expired the high distinctions and privileges of the bannerets and other knights, to whom the scions of nobility no longer attached themselves, from the moment their prestige began to decline. To retain this prestige, the nobility enlisted in the compagnies d'ordonnance, whose captains prided themselves more on their military rank than on their titles, since it better expressed the real amount of their influence by marking their command.

In time of war, when armies are confronting each other, nothing of importance occurs in the one without exerting some influence upon the other. The institution of compagnies d'ordonnance was therefore soon adopted by the neighboring nations, whence it quickly spread over all Europe. Thus Charles VII, in organizing the first standing army, wrought an important revolution in the social and political condition of the people, not only at home, but also abroad. The considerable body of regular and well-trained troops which he maintained when there was scarcely a single company permanently under arms elsewhere, gave France such superiority over the neighboring states, that in self-defence they were obliged to follow his example.

About this time there appeared in Europe a species of light horsemen, called estradiots or stradiots, probably from the Greek stratiotès, a soldier, consisting of Greek mercenaries. The French first saw them in 1494, a few days before the battle of Fornovo, and they are thus described by a contemporary, Philippe de Comines. "Estradiots sont gens comme genetaires, vestus à pied et à cheval comme Turcs, sauf la teste où ils ne portent cette toile qu'ils appellent turban; et sont

dures gens, et couchent dehors tout l'an et leurs chevaux. Ils étoient tous Grecs, venus des places que les Vénitiens y ont; les uns de Naples de Romanie en la Morée, les autres d'Albanie devers Duras, et sont leurs chevaux bons et tous de Turquie. Les Vénitiens s'en servent fort et s'y fient. Je les avois tous vus descendre à Venise et faire leur montre en une isle, et étoient bien quinze cents, et sont vaillans hommes, et qui fort travaillent un ost quand ils s'y mettent. Les estradiots chassèrent comme j'ai dit, jusqu'au logis où étoient logés les Allemands, et en tuèrent trois ou quatre, et emportèrent les testes, et telle étoit leur coustume; car ayant Vénitiens guerre contre le turc père de cettui-ci, appelé Mahumet-Ottoman, il ne vouloit point que ses gens prissent nuls prisonniers et leur donnoit un ducat par teste, et les Vénitiens faisoient le semblable, et crois bien qu'ils vouloient épouvanter la compagnie, comme ils firent; mais les dits estradiots se trouvèrent bien épouvantés aussi de l'artillerie, car un faucon tira un coup qui tua un de leurs chevaux, qui incontinent les fit retirer, car ils ne l'avoient point accoustumé." "Mémoires," livre viii, chap. 5.) They had such arms as they were provided with, or such as they captured from the enemy, but all had a lance pointed at both ends, resembling that of the ancient Greeks, and which they called azzegaye. Louis XII took 2,000 in his service when marching against the Genoese, and this kind of cavalry remained in the French armies until the reign of Henry III. The last time it is mentioned is at the battle of Coutras, where the Duke de Joyeuse had still a squadron of them.

In Hungary appeared the hussars, who soon made themselves formidable. According to a state ordinance, passed in the middle of the fifteenth century, every twentieth man was obliged to take the field, and these horsemen were called hussars, from the Hungarian husz, which signifies twenty, and ar, which means pay. "The arms of the hussars," says Père

Daniel, who describes them at length, "consist of a large sword, either curved or straight, attached to the waist by straps and buckles, and used for cutting right, left, and downward. Some of these troops carry in addition a long and very thin sword, called palache, and when rushing forward, bending down on their horse's neck, they spit the enemy with it. This term best describes the operation, for the sword is really a kind of spit, and in using it, they support it on the knee. Their customary mode of fighting is to surround an enemy's squadron, and affright it with their strange cries and queer movements. As they are very expert in managing their horses, which are small, and as they ride with very short stirrups, and press the spurs close to the flanks, they force them to a speed greater even than that of heavy cavalry. They rise high in the saddle, and are very dangerous, especially to all who break from the ranks. They rally very easily, and pass a defile with great speed. What makes their horses so nimble is that they are bitted only with bridoons; and thus they breathe more freely, and pasture at the shortest halt without unbridling. When they halt after a good run, the hussars rub their horses' ears and tails to revive their flagging spirits.

Their saddles are of very light wood, and short, with pommel and cantle of equal height. Instead of pannels or seat, they have some arrangement of strong plaited twine. The saddles are placed on good blankets, folded in several thicknesses, which are covers not only for the men to sleep under, but for their horses also. Over their saddles they spread skins with the fleece outward, which cover their pistols and the rest of their housings, and fall down in a point on the horses' hips. Their discipline is strict, their subordination great, and their punishments rude; the most ordinary is the bastinado. These troops are very useful for reconnoitring parties, van and rear guard, or on foraging expeditions, because they are exceedingly

fleet; but they cannot stand against squadrons in regular order of battle. The officers dress very neatly, each according to his rank and taste. They are even magnificent in clothing as well as in harness, arms, skins, and furs. Some wear silver or gilt stripes on the right arm, to indicate the number of battles in which they have been engaged; those of noble birth are decorated with a silver ball on the breast. The men look proud and somewhat ferocious; they wear a kind of vest or doublet, reaching only to the waist, with very tight sleeves, tucked up with a button; a pair of light pantaloons and outside boots without tops. Their shirts are very short, and they rarely change them, for which reason many have them of blue cotton. Their cloaks are not much longer than their vests, and they adjust them on the side that the rain strikes; their caps are high, and covered with skins; most of them have their heads shaven, leaving only a little tuft of hair on the right." At first their odd appearance made it fashionable for an officer of rank to keep one or more in his suite, especially in France, where, from the middle of the seventeenth century, they had gradually found their way, mainly as deserters from the Imperial army. In 1692 Marshal de Luxembourg, struck by their soldierly appearance, united them into companies for some outpost and partisan duty, and having found them very serviceable, immediately ordered several squadrons to be organized and taken into regular pay.

About the time when hussars were first heard of, France had taken into its service some companies of Basque and Gascon horsemen, called carabines or carabineers, from the Arab word karab, signifying an implement of war. They were armed with an arquebuse, three feet and a half long, a pistol, and a long straight sword; and their defensive equipment consisted of a gauntlet, covering the left arm to the elbow, a cuirass, cut out at the right shoulder, for convenience

in bringing up the arquebuse, and a kind of helmet, called cabasset, from the Spanish cabeza, head. They were drilled to load at full speed, and were required to hit the mark on horseback; the pistol was to be used only in cases of necessity, and the sword only in close contact; it being their distinctive duty to annoy the enemy at a distance. These carabineers, or arquebusiers, as they were also called, were placed on the flanks of the squadrons, and prepared the way for the charge by their effective fire, or endeavored to avert the consequences of an unsuccessful attack. In England they were called hargobusiers.

On rapid enterprises these carabineers were exceedingly useful, and in some instances they took up light infantry on their horses. An example of this kind occurred in 1543, during the operations of King Louis of Nassau on Bergen, in Hennegau, when five hundred horsemen mounted an equal number of infantry behind them. In 1552, when Prince Alexander of Parma wished to surprise the Duke of Alençon, he mounted several companies of infantry upon packhorses, to avoid the inconvenience of placing two men upon the same horse, and thus hastened toward the enemy. The advantage of bringing infantry quickly to any desired spot, soon began to be so well understood, that Marshal de Brissac, in 1554, organized such a corps for his expedition against Piedmont, and called them dragoons, which ever after remained the name for mounted foot soldiers. Cavalier Melzo, a distinguished officer of that time, in the Spanish service, enters into full details, and states that "having recognized the advantages which this kind of troops presented, they commenced to raise them also in the Spanish army, and when the duke of Alba went into Flanders, he took several companies with him." He also mentions that "originally they were armed with muskets, with matchlocks, but as the motion embarrassed them on horseback, they were

provided with wheellocks, both in France and in Spain." ("Regole militari sopra il governo della cavalleria." 1611.)

The term "dragoon," says Johnson, "from the Roman draconarii, denotes a kind of soldier that serves indifferently either on foot or horseback." Menage was the Doctor's authority for this derivation, which he evidently himself did not investigate; for, according to Vegetius, the draconarii were standard bearers of the Roman cohorts: "Dracones etiam per singulas cohortes draconariis feruntur ad prœlium." ("De Re Mil." lib. ii, c. 13.) Père Daniel, who wrote in the time of Louis XV, supposes that they were called dragons from the fleetness of their movements and the rapidity with which they ravaged a country, therein resembling the fabulous monster of that name. Sir James Turner, in his "Pallas Armata," says, "For what they got the nomination of dragoons is not so easy to be told; but because in all languages they are called so, we may suppose they may borrow their name from dragon, because a musqueteer on horseback with his burning match, riding a gallop, as many times he doth, may resemble that beast, which naturalists call a fiery dragon." Turning, however, to some earlier authority, we find in Markham, who published his "Souldier's Accidence" in 1645, "And for offensive armes, they have a fayre dragon, fitted in iron work, to be carried in a belte of leather which is buckled over the right shoulder, and under the left arm; having a turnell of iron with a ring, through which the piece runneth up and downe, and these dragons are short pieces of sixteen inches the barrell and full musquet-bore, with fire-locks and snap-haunces." Considering that carbineers were so denominated from the carbine, lancers from the lance, bombardiers from the bombard, engineers from the engines, &c., we may rightly infer that those who carried a dragon, were in like manner called dragoniers, as indeed they originally were, the name being yet

found in the German dragoner, and the Dutch dragonder; whereas the fantastical animal the dragon is called draak in the latter, and drache in the former of these languages. A beautiful engraving of a dragon in Sir Samuel Meyrick's collection of ancient armor, accompanied by a full description, may be found in Skelton's "Illustrated Arms and Armor." The name of the weapon is derived from the dragon's head which formed the muzzle, just as culverin (couleuvrine), serpentine, faulcon, falcon, &c., received their denominations from the heads that garnished their mouths. These were borrowed from the tubes for ejecting Greek fire, which were similarly embellished, and to the annoyance they gave the crusaders we may trace the origin of the fearful monster which Sir James Turner tells us, "naturalists call a fiery dragon."

The increased use of firearms in war, and their employment even among cavalry, could not fail to work great changes, in tactics. At the accession of Francis I, the French gendarmerie was considered the best cavalry in Europe; yet they continued to form in single rank. The German cavalry was the first to abandon this method, and Charles V passed an ordinance prescribing the formation, on eight and ten ranks, for both his Spanish and German horsemen. In arranging a body of troops for battle, they were massed in equal front and depth. The lancers occupied the first rank, and the flanks; the arquebusiers the centre. According to Cavalier Melzo, the arrangement was such that, whenever the ground permitted, the arquebusiers were placed in front of the lancers, who did not advance until the former had fired, and given sufficient space by opening out. The lancers were then supported by the more heavily armed troops, behind whom another body of arquebusiers was posted. Skirmishers were sent out to commence the engagement, or to reconnoitre the enemy; for this service every tenth arquebusier was taken. The infantry also

had its skirmishers, which united with those of the cavalry, and formed a line in front of the army, under whose protection the masses were placed in order of battle, and prepared for action. As soon as the battle had actually commenced, the skirmishers, called by the French enfans perdus, retired on both flanks to cover them. The enfans perdus were probably an imitation of the Roman velites, which were used for similar duty. They were not, however, like them, a separately organized body of troops, but volunteers from the different corps of the army. Père Daniel tells us that it often happened that more offered their services than were required, in which case they drew lots "in order not to cause jealousy, or offend those who could not be accepted." The name corresponds with what in English is called the forlorn hope.

Cavalry, at that time, was organized into companies or cornets, the latter word evidently derived from the Italian corno, which in the "Vocabulario della crusca" is defined, "a cavalry's company's ensign, small, and of square form." Hence the application of the term to the officer who carried the standard, and also to a body of cavalry furnished with such cornet or standard. According to the military ordinances of Charles V, a cornet of horse was then composed of sixty lances armed cap-a-pie, a hundred and twenty demi-cuirasses, and sixty arquebusiers. An ensign of infantry consisted of one hundred men armed with pikes, and fifty with halberds, two hundred with arquebuses, and fifty supernumeraries to supply losses. Both cavalry and infantry were united into one command, that they might support each other, and in whatever situation, be at all times ready either for attack or defence. But Montecuculi observes that "the captains have since remarked that infantry and cavalry are not advantageously united, either on the march, since one moves slowly, and the other rapidly; or in the quarters, since infantry can

camp under their tents, in places where there is no forage, which cavalry cannot do without certain ruin; nor even in general management and command, which differ totally in the two arms. Hence they conclude that it is better to separate the infantry entirely from the cavalry, and even to subdivide the latter into different corps of lancers, cuirassiers, and arquebusiers, leaving it to the skill and discretion of the general to combine them in such a manner as to support each other mutually in action." ("Mémoires de Montecuculi," livre i, chap. 2.)

A great change in cavalry tactics was wrought during the War of Independence of the Netherlands, which lasted from 1568 to the general suspension of hostilities in 1609. In this, there contended on the one side military art, and an army trained by the experience of more than fifty years' service, under the command of Charles V and Philip II; on the other, the Netherlanders, living only by trade and the pursuits of peace. These appeared a contemptible foe to the haughty Spaniards, whose very disdain, and continual arrearage of pay, greatly aided the thrifty Netherlanders. The war was a protracted one; and as the steady energy of the Dutch gradually developed success, so the discipline and bravery of the Spaniards by degrees relaxed. In this war the Netherlanders were unable to furnish the requisite number of lancers and spearmen, on account of the difficulty of procuring horses suitable for the service. Prince Maurice, therefore, did not give lances to the horsemen who were then raised in Germany, but endeavored to compensate for this, by making them more moveable. He taught them to wheel, to break off, to change front, and to execute charges and evolutions in separate bodies, formed in two or three lines. Thus a cavalry engagement was no longer decided by one charge of the whole mass, but by successive charges of separate squadrons and lines supporting each other. It was a favorite manœuvre of this prince when the Spanish

lancers charged, to let his German horsemen fire one volley, then open out quickly from the centre, and with the sword rush upon the attacking enemy from both flanks; which manœuvre was generally successful.

It was in the time of Maurice of Orange, that cavalry was first organized into regiments. He had commissioned certain officers to raise mounted troops in Germany, of which, by virtue of their contract, they should have the independent government or regiment. They accordingly called the bodies of cavalry which they formed, their regiments, of which they were the colonels. Each colonel had a lieutenant, as assistant and substitute in case of absence or sickness, entitled the colonel's lieutenant, or lieutenant-colonel; and under him was an officer who had the charge of the interior economy, called the colonel's superintendent or major. The regiment was divided into companies, over which a captain had the command. The captain had likewise a lieutenant and a sergeant; the cornet carried the standard. Four squadrons made a regiment, which never exceeded a thousand horse; they were formed in five ranks. The prince called these troops, which contributed so signally to his victories, cuirassiers, after the cuirass which the men wore as defensive armor. They were fully as heavy as our modern cuirassiers, but much lighter than the gendarmes. For offensive arms they had long-stocked pistols, and cut and thrust swords.

The high reputation of this cavalry made it the model for mounted troops throughout Europe. In France, where some foreign regiments of this description were in service, they were known by the German name of reiter, riders. Their great success largely contributed to the disuse of the lance, which for various reasons was at that time rapidly declining in favor. Not the least reason for this was the difficulty of procuring suitable horses for the proper wielding of this weapon. It was neces-

sary that they should be very large, powerful, well trained, and manageable withal; they were therefore very expensive, and many nobles, ruined by the internal troubles of their country, being unable to purchase such animals, gave up the lance, and took service in the light horse. Another reason of the gradual disappearance of the lance, was the pre-requisite of a very long course of exercise, to establish habits of masterly proficiency in its use. In earlier days young men passed their first youth under a long and severe training, that they might afterward gain glory at the tournaments; but when the accidental death of Henri II of France, in 1559, and of Prince Henri de Bourbon-Montpensier, who was killed in the following year, by the fall of his horse, while careering round the lists, caused the discontinuance of these chivalrous games, the nobility thereafter entered into the regiments without experience in the exercise of the lance, and their awkwardness in its use soon disgusted them. So the lance disappeared rather from the force of circumstances than from any acknowledged disadvantage of the weapon itself; on the contrary, it continued to be styled the "queen of weapons;" but it was considered useful only in the charge.

When rest had been restored to the disquieted nations, by a cessation of hostilities for a period of only nine years, after the great war of the Netherlands had devastated the banks of the Rhine for above half a century, another war broke out lasting from 1618 to 1648, but which should really be regarded as only a sequel to the former. In the one, Maurice of Orange, in the other Gustavus Adolphus, was the creator of new tactics. The latter first introduced that order and regularity in military operations, which ensured unity of action, and prevented the confusion which had frequently proceeded from the failure or disorder of particular divisions of an army. Arraying his soldiers in two or three lines, and providing for reserves, he

nevertheless presented a broad front to the numerous forces of the enemy, by adopting the quincunx order of the Roman legions and diminishing the depth of his battle lines, which he reduced to four ranks in cavalry, and six in infantry. Wholly discarding Tilly's favorite doctrine of "a ragged soldier and a bright musket," he was the first to set forth the essential importance of clothing soldiers regularly and well. He also established regular pay as far as it was practicable, founded a manufactory of arms, improved the musket, re-formed the matchlock, reduced the armor to head and breast pieces, and abolished the pike.

The lance had now disappeared almost everywhere, and when Gustavus entered Germany, the Swedish horsemen consisted of cuirassiers and dragoons only; the Austrian, of cuirassiers, carbineers, dragoons, and hussars. His cavalry charges were systematically prepared by musketry and artillery fire. Then, when the advancing forces were thrown into disorder by the effective volleys of the musketeers and guns, the cavalry rushed upon them sword in hand, and generally overthrew them. This process was adopted to discomfit the imperial horsemen, which, on account of their heavy armor, could move but slowly. In order that he might still more effectively overwhelm their cavalry, the king commanded his troopers, the moment the Austrians began to move, to charge them at speed, sword in hand. He did not allow those half wheels, half halts, and caracoles, on which, according to Walhausen, the cavalry of that time prided themselves overmuch, and the design of which was to draw on them the first fire of the enemy. He justly maintained that the more quickly a line of cavalry rushes on the foe, the less it can suffer from their fire. The charge was made by the first three ranks, the fourth remaining in reserve; hence the error of some authors, who have supposed that three ranks were the usual formation under this monarch.

Harte, in his "History of Gustavus Adolphus," gives some interesting accounts of the soldiers' pay during the Thirty Years' war, which, when estimated by the cost of the necessaries of life at the two periods, was much more liberal than the present rate. In the Swedish service it was not so high as in the imperial, but as, in the latter, it was liable to constant stoppages, and was generally irregular, the service of Gustavus was probably quite as profitable. Some details concerning this matter exhibit the system of mercenary soldiery in its very worst features. "Howbeit," says Captain Dalgetty, "a cavalier of fortune might thrive indifferently well in the imperial service, in respect his private casualties are not so closely looked to as by the Swede; and so that an officer did his duty in the field, neither Wallenstein, Pappenheim, nor old Tilly before them, would likely listen to the objurgations of boors or burghers against any commander or soldado, by whom they chanced to be somewhat closely shorn." In fact, the Austrian commanders endeavored to compensate the soldiers for their irregularity of pay, by permitting them to ravage the country and rob the inhabitants. Principle and political attachment seem to have been utterly disregarded by these gallant cavaliers of the Thirty Years' war. The country which afforded the richest prospect of plunder was readily adopted as the fatherland, and patriotism, with a most accommodating versatility of sentiment, transferred its exertions to the new cause. "A cavalier of honor," says the conscientious Captain Dalgetty, "is free to take any part which he may find most convenient for his own peculiar;" and the party selected by these honorable cavaliers was always that which provided the best pay and the most plunder. Such was the spirit of the times, and the difficulty of supplying this only security of adherence, in some instances led to the most frightful excesses, which the commanders were obliged to tolerate, as the only means of appeasing their muti-

nous troops. Baner himself, Gustavus' field marshal, was frequently unable either to feed or pay his army, and was reduced to the painful predicament of conniving at the commission of every crime which lust or rapacity could incite.

The success of the Swedish cavalry was so marked, that all the European states began to imitate it, and adopted its formation in four ranks. France, which had been foremost in this movement, went even further, and in 1635 Louis XIII, totally remodelling his cavalry, formed it all in three ranks. He dissolved all the companies and cornets of horse, and all that yet remained of the ancient gendarmerie, and organized them into regiments of three and four squadrons; each squadron of three companies, and each company of one captain, one lieutenant, one cornet or second lieutenant, one chief non-commissioned officer, and fifty men. He introduced great changes in the armament, which was made much lighter, and created some regiments of musketeers and fusileers, which he supplied with musketoons, furnished with the then newly invented flintlock. This cavalry, however, continued the practice of firing before charging, and its movements were clumsy and slow.

The civil war which broke out in England in 1642, produced two distinguished cavalry leaders, Cromwell, and his fiery antagonist, Prince Rupert. "The former," says Nolan, "forty-four years of age when he first drew a sword, showed himself a great soldier at the very outset. He himself raised, organized, and disciplined his troops of horse, and set his men an example which they were not slow in following. His mental and bodily energy, his vigorous conceptions, quiet decisions, and the dread vehemence with which he urged his war steed into the thick of battle, made him a cavalry leader second to none in history. Indefatigable and active, a good horseman, and perfect master of the broadsword, he had unbounded ascendency over the minds of his followers, and led them

through or over all obstacles that human prowess could surmount. The impetuosity and rashness of Prince Rupert were no match for the cool courage and presence of mind of Cromwell. The latter often turned defeat into victory; the former lost many a fair field by letting his cavalry out of hand after the first success; and during his absence, his wary and more able opponent secured the prize." The battles of Marston Moor and Naseby were won by cavalry alone.

The French now made a greater advance in tactics than any other nation; for the aggressive wars of Louis XIV rapidly developed the military art. Generals were formed who became the brightest ornaments of military history. Opposed to a French Turenne, Luxembourg, and Condé, stand Montecuculi, Marlborough, and Eugene of Savoy. The movements of armies were more rapid and diversified; and thus cavalry found its sphere of action vastly enlarged, and had to introduce many changes in its formation, armament, and evolutions, because infantry had improved its fire, and extended its front. In the fifteenth century, the cavalry had compelled the infantry to form in dense masses; now the infantry forced the cavalry to widen its front, and to increase its speed. Defensive armor, too, entirely disappeared, except as a distinctive ornament for princes, generals, and other chiefs. Only one regiment of cavalry, the Cuirassiers du roi, retained the cuirass, and this was the germ from which our modern cuirassiers sprang forth.

During this period the torch of war blazed in the north of Europe. At various intervals, Swedes, Poles, Brandenburgians, and Muscovites fought alternately on the plains of Poland and the steppes of Ukraine. Charles XII of Sweden, that chivalric monarch, rejected all defensive arms, and his cavalry, with which he wrought out such great results, consisted almost exclusively of dragoons. He, whose restless spirit was ever pressed onward, was not content that his cavalry, without any depend-

ence upon other arms, but wholly self-reliant, and without firing, should charge the enemy's horse at full speed; he led it with equal daring against intrenchments and batteries, and always with success. This impetuous monarch knew well that mere velocity of motion quickens the natural vivacity of mankind; which, often amounting to reckless fury and headlong enthusiasm, leaves no time for thought or calculation of danger; that, at such moments of madness, death loses its terrors, and victory presents itself in dazzling colors to the soul of the wildly rushing warrior.

After the battle of Pultowa, in 1709, where in one day he lost the fruits of so many victories, having obtained a refuge at Bender, Charles succeeded in involving the Porte in a war with Russia, which soon extended to Austria also. For ages the finest cavalry known in Europe was unquestionably the Turkish. The largest portion of its men and horses was brought over from the Asiatic provinces of the Empire, and the rest were principally of Asiatic descent. The horses were not large, but nimble, spirited yet docile, and so trained and bitted as to be under perfect control. The hollow saddles were rather heavy, but all the other appointments were light. The soldiers rode in the broad short stirrup to which they and their sires had been long accustomed, on which they had a firm and natural seat, and from which it was very difficult to dislodge them. Their scimitars were light and sharp, and in addition to them, they generally carried in their girdles that shorter, slightly curved weapon, called the yataghan, with an edge like a razor's. Some of the spahis used long lances or spears, but these were always flung away as useless in the mêlée of the battle. Their tactics were few and simple. If they could not force in the edge of one wedge, they tried another and another; if they penetrated the hostile line, they dealt death everywhere around them, their sharp weapons generally inflicting mortal wounds

by cutting the limbs clear off. If the enemy gave way, they spread out like a fan, and while some pressed on the front, others turned the flank and assailed the rear. (Marmont, "Voyage en Hongrie, etc.")

Neither discipline nor the fire of artillery and infantry could save the Russians from these fanatic horsemen; their only hope lay in the chevaux de frise with which every column was provided, and for whose conveyance each battalion was furnished with two light carts. In the neighborhood of the enemy, the men carried the chevaux de frise on their shoulders, formed a skeleton column, and when an attack was threatened, wheeled in line, fixed the points in the ground, and fastened the stakes together. To these arrangements the Russians owed their first success against the Turks. When General Munich led his forces against them, however, he considered the chevaux de frise an insufficient protection, and he additionally armed a portion of his men with long pikes. His troops marched in large, oblong squares, which, at a moment's notice, were surrounded by the pikes and the iron spikes of the chevaux de frise, and flanked by artillery. At this impassable barrier they received their turbaned assailants, and poured upon them a destructive fire in perfect security. No European cavalry, with all its tactics, large squadrons, and lances, ever so appalled an enemy, or brought infantry to the necessity of seeking safety behind impassable obstructions. The Moslems alone inspired sufficient dread, to compel on the part of the infantry a humiliating confession of their weakness, by the precautionary measures they adopted; for when unprotected by these formidable appliances, the Turks seldom failed to burst in among them, and then handled the sword with masterly quickness and without cessation, until checked by the reaction resulting from the excess of their own fury. (Berenhorst, "Betrachtungen über Kriegskunst.")

The cavalry of the Russians and Austrians greatly improved during their wars with the Turks, and the knowledge thus practically gained was well applied by the Austrians during their first campaigns against the Prussians in the Seven Years' war. In western Europe little progress was made during this epoch in cavalry and in the art of war in general. One great light, however, shines in Marshal Saxe, whose brilliant career places him among the brightest military illustrations of his age. When he assumed command of the army in Flanders, he gave great scope to his light cavalry, which, under him, became really the eye and the feeler of the army. He was the first to abandon that slowness of manœuvring, which was the bane of tactics in his time. With him, boldness of conception and rapidity of execution were cardinal conditions of success. He is the author of the familiar axiom, "the secret of victory resides in the legs of the soldiers," and in regard to cavalry, it was his opinion that "such as cannot go at speed over a couple thousand yards to pounce upon the foe, is good for nothing in the field." Until the peace of Aix-la-Chapelle, in 1748, the French cavalry nevertheless continued to distinguish itself more by its courage than by its tactics. At the battle of Fontenoy, having executed several vigorous but unsuccessful charges against the formidable columns of the Duke of Cumberland, Marshal Saxe ordered up four pieces of artillery which he held in reserve; their well-directed fire prepared the way for a new attack, which overthrew the enemy and determined the fortune of the day. We would naturally suppose that from this moment the necessity of horse artillery must have been sensibly felt, and yet it did not make its appearance until seventeen years later, at the battle of Reichenbach, in 1762.

But now commences the true era of cavalry. Casting away the leading strings, in which until then it had been held, it

takes the road to real progress; and trained by skilful officers, and handled by a man of genius such as Frederic II, it soon performed that part, so momentous, though so rarely understood, which belongs to it in battle, and in all other warlike operations. When Frederic the Great ascended the throne, he found his army about eighty thousand strong. With this force, which under Leopold of Dessau had attained a precision of movement until then unknown, together with an increased facility in the loading and firing of muskets, he entered upon the theatre of his deeds. His cavalry, much inferior to his infantry, consisted of sixty squadrons of heavy horse, forty-five of light, and six of hussars. They had been thoroughly drilled to fire in line, both on foot and on horseback; they excelled in varnishing their bridles, saddles, and boots, and plaiting ribbons in their horses' manes; but nothing had been done to teach them riding, and to make them formidable in close combat. Both men and horses were colossal; they dared not move upon uneven ground, and charged at a walk or a creeping trot. The great Frederic did not think much of this kind of cavalry, and at the battle of Mollwitz, which would have been lost but for the steadiness of his infantry, its conduct was in no way calculated to change his opinion. They fled; and so did Frederic himself, says Alison, "at the very first repulse of his cavalry; and he was already seven miles off, ensconced in a mill, when he received intelligence that his troops had regained the day, and at the entreaties of General Schwerin, he returned to the field."

At the close of the first Silesian war, Frederic immediately proceeded with the reorganization of his cavalry. He abolished all firing in line, and devoted his whole attention to making his men good riders. They were all trained to do what Marshal Saxe had laid down as indispensable, namely, to go over the ground at their best speed for two thousand yards without

breaking their array. "All evolutions," says Frederic's instructions, "are to be made with the greatest speed; all wheels to be done at a canter. Cavalry officers must, above all things, form the men into perfect riders; the cuirassiers to be as handy and expert on horseback as a hussar, and well exercised in the use of the sword. Every squadron, as it advances to the charge, must attack the enemy sword in hand, and no commander shall be allowed to fire, under penalty of infamous cashiering, the generals of brigades to be answerable for this. As they advance, they first fall into a quick trot, and finally into a full gallop, but well closed, and if they attack in this way, his majesty is certain that the enemy will always be broken. Every officer of cavalry must ever bear in mind that there are but two things required to beat the enemy: first, to charge him with the greatest possible speed and force; and, second, to outflank him." These passages will give some notion of the great changes effected by the king in cavalry tactics.

At first, many of the old Prussian generals stoutly opposed these innovations, but the king persistently carried them through, for he was convinced of the advantage of impetuosity in the attack; and his mounted troops, which had been defeated constantly in his first campaigns, when thus reorganized and led by Seydlitz and Ziethen, astonished the world by their deeds of arms; not only overthrowing cavalry in their headlong career, but sweeping whole armies of infantry away before them. Witness the battles of Strigau, Kesseldorf, Rossbach, Leuthen, and Zorndorf. The last shed most glory on the Prussian cavalry, which, in thirty-six squadrons, under Seydlitz, not only turned the fortune of the day, saving the infantry and artillery, but checked the victorious Russian cavalry, overthrew it, and drove it from the field. It then returned to fall upon the Russian infantry, which, being prepared to receive it, fought with the utmost courage and tenacity; for when their

masses were broken into by the furious horsemen, those who escaped the sword formed themselves into other masses, and had to be charged again and again. In few modern battles did so many men fall as at Zorndorf, although the Prussians had been twelve hours in the saddle before advancing to the charge.

Never were more glorious deeds achieved by cavalry than those executed by the Prussian horsemen of those days, thanks to the indefatigable exertions of their king. In these he was admirably assisted by Seydlitz, who from his earliest youth had evinced a wonderful talent for horsemanship. When only seven years old, he is said to have ridden between the sails of a windmill in full revolution. This feat he often performed, even after he had attained the rank of a general officer. In 1738 he entered the king's service, and was captured in the first Silesian war, his horse having been killed under him in a charge. One day at Berlin, riding out with the king and some officers, he maintained that under no other circumstances could a cavalry officer be excusable for being made prisoner. They were then just crossing a bridge over the Spree, and the king, having ordered both ends to be closed, turned to Seydlitz, and told him that he was his prisoner. "Not so," replied the latter, and spurring his horse, he leaped over the parapet into the river. All trembled for his safety, for the bridge was high; but to their amazement they saw him, seated on his horse, quietly swim to the shore, and join the cortége, as if nothing extraordinary had occurred. It was through his influence that, after the peace of Hubertsburg and Dresden, the establishment of riding houses was commenced, and riding masters were appointed for every regiment.

Nothing was left untried by him to make his men bold and skilful riders. In front of his window there was a large stone watering trough, surrounded by a railing three feet high. Almost daily, at the hour of watering, he sent for some squad-

ron fully equipped, and let every man leap his horse over the barrier, drink, and get out as he got in. Whoever fell with or from his horse was severely punished. This exercise took place in winter as well as in summer. On one occasion, when the king was inspecting his regiment, and complained of the number of deaths occasioned that season by accidents at drill, Seydlitz answered drily, "If you make so much fuss about a few broken necks, your majesty will never have the bold horsemen you require for the field." In 1747, after the second Silesian war, being yet only major in the Natzmer hussars, he busied himself particularly with the officers. He overcame their prejudice that education and refinement would impair their authority, and soon convinced them that, on the contrary, they would naturally increase their respect. Encouraged by his king, he rose rapidly from step to step, notwithstanding the prejudice of seniority, and in spite of envy, that from old habit hangs like a dead weight upon talent to prevent or retard its ascent. He was soon removed to a sphere where his great talents could act without impediment; where the Prussian cavalry, raised by him to a height unprecedented in history, was enabled to contribute so essentially to the successful result of a severe contest of seven years, to fortify the crown of the king, and help to exalt his military fame.

At the autumn manœuvres, which Frederic annually held after the peace of Dresden, that which was newly learned was practised and discussed. Here the talents of the officers had opportunities to display themselves, and the king became personally acquainted with them. The praise of their sovereign encouraged those who distinguished themselves to redouble their zeal; while the indolent were severely and justly reprimanded. When the autumn manœuvres were ended, the king labored with Seydlitz, Ziethen, Saldern, Gaudi, and others, in order to explain to them the defects which had been observed;

and these generals were then obliged to perfect the new plans of the king. In the order of battle, Frederic at last departed from the customary practice of placing the cavalry on the flanks and there only. Whether in the first and second Silesian wars he did not fully understand the power of cavalry, or had not yet generally employed it in great operations, owing to its slowness of movement, certainly in the third Silesian or Seven Years' war, when Seydlitz was its head, the king acted on entirely different principles. In 1756, at Lowositz, he placed his mounted force in two lines behind the infantry, and thereafter laid it down as an axiom that on the day of battle the cavalry should be united in one large mass on a given point. No corps of cavalry was permitted to advance out of line without flank columns, either as a protection or as a means of outflanking the enemy; and the attack and retreat in echelons were prescribed by regulation, as a mode of supplying the accidental want of reserves.

Frederic had two preferences, in no way concurred in by his generals. Prince Louis of Baden, in the war against the Turks, had been obliged to close the intervals between his battalions, to prevent those bold horsemen from finding their way into his lines. Puységur, a French infantry general, reduced this practice to rule, both for cavalry and infantry, and Frederic adopted it, but probably rather as a test of fine manœuvring than with the intention of applying it to actual warfare. However, he occasionally did so, but "always to his loss," says Warnery, "even after a first advantage." The charge en muraille, therefore, became more and more confined to manœuvres, and according to General Von Brandt, it is doubtful whether during the Seven Years' war this mode of attack was once practically resorted to. In a former chapter we have seen the disaster which it brought upon the French at Minden. The king had also ordered the guide to be in the centre of the

squadron, which, in movements carried out at speed, caused the greatest disorders, by the pressure of the flanks; so, "on manœuvring at a review," says Warnery, "they always took guide on the right, and when the king asked his generals whether they aligned on the centre, they always answered in the affirmative, although it was not so."

At the death of Seydlitz, which occurred in 1774, the Prussian cavalry had reached its highest perfection. During the last years of his life, military officers from all parts of Europe crowded to Berlin to witness the manœuvres; but these pilgrimages were not always of much advantage to the visitors. In his old age, Seydlitz had drifted to the little vanity of dazzling his guests, and attempted all manner of impossibilities. His displays, therefore, did not very favorably impress the foreign officers, who had gone to study, and not to flatter the great man. The generals who succeeded him, proud of their former successes, and losing sight of the real merit of their accomplished model, copied only the faults and foibles of his later years. As a consequence, when the country was next engaged in war, its cavalry was found exquisitely drilled in minor details, but not disciplined for war.

Meanwhile, most of the European nations had largely adopted the Prussian system, except France, whose cavalry under Louis XVI failed to participate in the general improvement, and during the Revolution became greatly disorganized. At the outbreak of the war, in 1792, it counted in all only 37,000 sabres. Distributed through the fourteen armies which France put into the field, these were at fearful odds against the various powers, whose mounted troops were vastly superior, both in skill and numbers. Unable to cope with such opponents, it was at first employed merely as a support to infantry and artillery, until some years of campaigning had again restored it. The disaster which befell the French at

Würzburg, in 1796, where their whole cavalry was defeated by fifty-nine Austrian squadrons, was the more severely felt, as France, confined to her own resources, was unable to remount her troops with suitable horses. When Napoleon assumed the direction of affairs, this subject at once engaged his attention. As he had found shoes and clothing in Italy, so he found horses in Germany; and soon he raised his cavalry to such efficiency, that with them, in 1806, he destroyed that proud arm of the Prussian service, which until then had been the model for all Europe. "The battles of Jena and Auerstadt," says Alison, "prostrated in a single day the strength of the Prussian monarchy, and did that in a few hours, which the combined force of Russia, Austria, and France had been unable to accomplish in the Seven Years' war. The loss of the Prussians in the two actions was nearly 30,000 killed and wounded, besides a nearly equal number of prisoners, 200 pieces of cannon, and 25 standards. Four generals had been killed, or disabled by wounds, and the confused mass of fugitives was left without a leader. Thus, when morning dawned upon the scene of ruin, the soldiers from the three armies of Rüchel, Hohenlohe, and the Duke of Brunswick fled in different directions, as accident or intelligence guided their steps." From that time forward the French cavalry took the lead, and though their tactics differed from those of Frederic and of the present time, they were so well adapted to the circumstances, that, led by chieftains such as Kellermann, Montbrun, Murat, Lasalle, and others, they performed achievements which, in point of boldness and success, stand unsurpassed in the annals of cavalry.

"Napoleon," says Mahan, "appeared upon the scene at a moment the most propitious for one of his gigantic powers. The elements were prepared, and although temporarily paralyzed by a state of anarchy, resulting from the political and

financial condition of the country, they required only an organizing hand to call into activity their inherent strength. This hand, endowed with a firmness and grasp that nothing could shake or unloose, was that of Napoleon. To him we owe those great features of the art, by which an enemy is broken and utterly dispersed by one and the same blow. No futilities of preparation; no uncertain feeling about, in search of the key-point; no hesitancy upon the decisive moment; the whole field of view taken in by one eagle glance; what could not be seen, divined by an unerring military instinct; clouds of light troops thrown forward to bewilder his foe; a rushing fire of cannon in mass opened upon him; the rush of the impetuous column into the gap made by the artillery; the overwhelming charge of the resistless cuirassier, followed by the lancer and hussar, to sweep up the broken, dispersed bands; such were the tactical lessons practically taught in almost every great battle of this great military period."

By the rapidity of his operations, Napoleon at first astonished not only the generals of the enemy, but also his own, who did not relish this activity, so wholly new to them. While admitting his successes, they seemed to think that they resulted from good luck quite as much as from calculation and tactical combination. They reproached him for his blustering way of throwing them upon the enemy before they felt quite ready to meet him, a method which they considered incompatible with that careful deliberation that secures victory, less speedily it is true, but at a smaller sacrifice of life. In a word, they were exceedingly displeased to be thus kept in perpetual motion, and did not hesitate to assert that no troops could endure such fatigue. Without heeding their censures, Bonaparte wrote to the Directory, "The Roman legions, they say, made twenty-four miles a day; our half brigades make thirty, fighting not included." His first campaign occupied just fifty-two days, during

which he gained four pitched battles, and a great number of less important victories. The close of this war was as remarkable as its commencement. In less than two months, after beating Prince Charles on the Tagliamento, the Isonzo, and at Jarvis; after passing the Julian Alps, the Drave, the Save, and the Mur, he obliged the House of Hapsburg to conclude peace at the moment the French army was master of Trieste, Istria, Carniola, Carinthia, Styria, and a large part of Lower Austria. When within twenty leagues of Vienna, he granted an armistice to Generals Bellegarde and Meerfeld; and having signed it, he traced the limits of the armies, which were determined only after a long discussion concerning the corps of Bernadotte and Joubert, in the course of which he said to them, "And where do you think that General Bernadotte is, gentlemen?—Perhaps he is at Fiume, said Bellegarde.—No! he is in my parlor, replied Napoleon, and his division is within two miles of this place. But, continued he, where do you imagine General Joubert to be!—Perhaps at Innspruck, answered Meerfeld archly, if indeed he has been able to keep off a column of grenadiers which has left the army of the Rhine to intercept his progress.—He too is in my parlor, said Napoleon, and his division is within six miles." These answers astonished the Austrians generals the more, as they had just despatched large detachments of troops to the provinces of Carniola and Tyrol, through which they supposed it to be Bernadotte and Joubert's purpose to penetrate.

This indefatigable activity, which had been the spring of so many successes, never left him. "What!" wrote he to Augereau, in 1814, "What! six hours after receiving the first troops from Spain, you are not yet in the field. Six hours' rest is quite enough for them. I conquered at Nangis with the brigade of dragoons coming from Spain, who from Bayonne had not drawn rein. The six battalions from Nismes, you say,

want clothes and equipages, and are uninstructed. Augereau, what miserable excuses! I have destroyed eighty thousand enemies with battalions of conscripts scarcely clothed, and without cartridge boxes. The National Guard, you say, are pitiful. I have here four thousand from Angers and Bretagne, in round hats, without cartridge boxes, but with good muskets, and I have made them tell. There is no money, do you say? But where do you expect to get money, if not from the pockets of the enemy? You have no teams! Seize them anywhere. You have no magazine! This is becoming too ridiculous. I order you to put yourself in the field twelve hours after you receive this letter. If you are still the Augereau of Castiglione, keep your command. If your sixty years are too much for you, relinquish it to the oldest of your general officers. The country is menaced and in danger. It can be saved only by alacrity, and not by vain delays. You must have a nucleus of six thousand picked troops. I have not so many, yet I have destroyed three armies, captured forty thousand prisoners, taken two hundred pieces of artillery, and thrice saved the capital. The enemy are in full flight upon Troyes. Be the first in the fire; act no longer as of late, but resume the method and spirit of '93. When Frenchmen see your plume waving in the van, and you first of all exposed to the enemy's fire, you can do with them whatsoever you will."

At the commencement of the Revolution there was but one regiment of cuirassiers in France. In 1802 Napoleon added three, which did such good service that two years later he increased the number to twelve. The exploits of these regiments rank with the most brilliant on record, and their fame rose to such a height in the French army, that "brave comme nos cuirassiers" became a proverb, whose justness was universally conceded abroad as well as at home.

The history of defensive armor presents a very singular

fact, in the alternate esteem and contempt in which it has been held at various epochs. Sometimes the most warlike people have disdained it, through excess of confidence in their strength

Fig. 76.

and courage. At other times the most military nations, at the very climax of their glory, have attached a high value to it. Some, when their military institutions were most efficient, have lightened or diminished their defensive armor; among others, the decay of their institutions has induced its gradual removal. Indeed, a just medium of appreciation has scarcely ever been attained; and those who advocate the disuse of protective armor, by no means agree upon the limits of its abolishment. Some would leave every part of the person unprotected except the head, which they would cover with a metal helmet, and a strong neck piece. Others are content with soft hats of broad

brim, as a defence against the weather; others again, deem a light kepí sufficient. Some allow metallic epaulets, whose reputed efficacy against swordcuts is thought ample compensation for the severe discomfort they inflict upon the men when lying down in bivouac. Others, more solicitous about the legs, would guard them with heavy topboots, partly against the bayonet, partly against friction and pressure in the ranks. Some would fortify the soldier with an iron bar or chain reaching to the hip; and they recommend the use of metal gauntlets, covering the arm up to the elbow, in order to prevent a fearful lopping off of limbs. Add a good-sized carbine, sword, and revolver, and we may form some estimate of the agility of men thus accoutred; yet such equipments have been proposed for cavalry intended to be extremely light, but which, in truth, would be at least as heavy as any of the old-fashioned arquebusiers.

Indeed, the distinction between light and heavy cavalry is always relative. At the time of the gens d'armes the light cavalry, "levis armaturæ equites," were those not armed cap-a-pie. The reiters and cuirassiers of Maurice of Orange were regarded as decidedly light horse, and even to-day the light cavalry of some nations is much heavier than the heavy cavalry of others. Therefore, while giving due attention to the views and opinions of those who have exerted themselves to introduce improvements and correct abuses, let us be careful when following their ways of amendment, knowing that they are beset with great dangers, and that reformers are liable to exaggeration and prejudice. Thus the cuirass is said to be heavy and uncomfortable to the wearer. This is evidently a mistake, for it rests, not on the shoulder, but on the waist; and as the most delicate ladies have habitually worn at least an equal weight of petticoats, supported in the same way, it would seem preposterous that a strong man cannot carry the same amount of armor as long he is likely to derive benefit from it. But no

cuirassier ever complained of discomfort from his cuirass; on the contrary, every decree for its removal has invariably caused the loudest discontent. It is too ponderous for the horse, they say; not much more so than a carbine, which, whether hooked to the bandoleer or carried in the socket, always bears on one side. Besides, in a former chapter we have recounted the agility of the mail-clad Circassian cavalry, who, in point of dexterity and nimbleness, are unequalled by any other horsemen, light or heavy. The cuirass, some allege, fails to be proof against the rifle bullet. If so, make it still lighter, and proof only against the sword. But at the very moment we write this, we receive the advertisement of a new kind of protective armor, no longer entitled cuirass, but "bullet-proof vest," composed of two plates of light cast steel, inserted between the cloth and the lining, weighing from three and a half to five pounds, and certified by high military authorities to have resisted bullets from the Springfield rifled musket and Sharp's carbine at a distance of less than a hundred yards, and from Colt's army and navy pistols at ten to fifteen yards. The demand for this vest is stated to be so great that it exceeds the manufacturer's ability to supply it. It is thus that actual warfare deals with all these peace arguments, and that some species of protection will always be sought, recommended, or prescribed, whether for the head, the shoulders, chest, arms, thighs, or legs, according to the notions or the fears of the wearers and reformers.

Among those who admit the propriety of giving defensive armor to heavy cavalry, there are some who would restrict the cuirass to the breastplate only. For such we translate the following account of the terrible cavalry combat of Ratisbon, in which the French engaged forty squadrons of cuirassiers and thirty-four of light cavalry, and the Austrians almost an equal number. We quote from General Marbot, who was an eye-

witness: "The Austrian cuirassiers were soon in the presence of our own. The light horse of both parties then drew aside, in order not to be crushed between those two formidable masses, which, rushing impetuously upon each other, closed with a terrific collision that crashed into a stupendous and appalling mêlée. The conflict, at once frightful and majestic, was lit by a feeble twilight and the paleness of the rising moon. The shouts and cries of the combatants were drowned by the deafening din of thousands of helmets and cuirasses ringing beneath the blows of as many ponderous swords, and flashing with countless sparks of fire. Both French and Austrians were resolved to remain masters of the field. On both sides there were the same courage, the same tenacity, and nearly the same number, but not the same defensive armor; hence very different results. The Austrian cuirassiers had, like ours, head and breast protected, but not the back; and during the mêlée, they were mercilessly stabbed from behind by the French, who, having nothing to fear in that way, kept up the work of slaughter, killing a vast number of the enemy, and losing few men of their own." General Marbot states that the number of wounded on the side of the Austrians, compared with the French, was as 8 to 1; and of their dead, as 13 to 1; and thus concludes his recital: "The Austrian cuirassiers, thus bravely attacking a victorious enemy, in order to give their own columns time to effect their retreat, performed the most admirable deeds of heroism and self-sacrifice; but if their backs had been protected as well as their chests, their courage would have been the same, and their charge might perhaps have succeeded; at least they would not have been so unfortunate during the mêlée, and their retreat would not have become a butchery." After this memorable example, we refrain from further comment, and leave the subject of defensive armor for heavy cavalry to the reflection of our readers.

The lance, which, since the close of the sixteenth century, has gradually fallen into disuse, maintained its national existence in Poland, whose cavalry, much later than any other, remained similar to that of the age of chivalry. At its reorganization in 1717, the Polish army contained both heavy and light cavalry. The former consisted of a hundred and forty-four companies, half of which, armed with lances, formed the first rank, while the other half, armed with carbines, formed the second. Each man had also sword and pistols. This heavy cavalry was further divided into husarz and pancerny. The husarz composed the finest gendarmerie in Europe. They wore a cuirass covered with a panther's skin slung over the back, the head of it being fastened on the left shoulder, the remainder falling down to the right. The back piece of the cuirass was adorned with a species of feather wings, rising as high as the helmet. They carried a gilt lance, fourteen or fifteen feet long, with a flag near the point, whose fluttering in the attack, together with the rustling noise of the wings, was intended to frighten the enemy's horses. The armor of the pancerny resembled that of the husarz, excepting that a coat of mail was substituted for the plate cuirass. None but the nobility were admitted into these companies, and no one could aspire to public office who was not a member of this corps. The light cavalry was also composed of Polish noblemen, but the Tartars, whom a grand duke of Lithuania had received into his states during the conquests of Tamerlane, were admitted on an equal footing, both as officers and privates. They wore no defensive armor, but in other respects were equipped like the heavy cavalry, only in a less costly manner. One of their first leaders was a Lithuanian nobleman named Huland, whence the term hulan or uhlan, which still remains the German denomination for lancer. In 1734, Marshal Saxe employed a pulk of hulans, organized in Polish fashion, but they were

disbanded after the peace of Aix-la-Chapelle. In 1745 the King of Prussia, for the especial purpose of opposing a similar description of cavalry to the Cossacks of Russia, established spearmen or lancers, whom he called Bosniacks; but they proved of very little advantage. In 1807, Napoleon made the experiment with one regiment of select Polish lancers; this was so satisfactory, that he soon increased them to five regiments, to which he added seven French regiments, all of which have done excellent service, and which, for uniform and armament, have since become the model of most lancers in Europe.

Fig. 77.

Extreme opinions are yet expressed by cavalry officers on the subject of the lance, which some decry as valueless, while others, adopting the words of Montecuculi, pronounce it "the queen of weapons." It is not unnatural that commanding offi-

cers of cavalry, and even of lancer regiments, who have never seen the lance busy in battle, and who attach little importance to the recorded deeds of the Poles and Cossacks, should doubt the efficiency of a weapon almost new to them; yet it is worthy of note that the lance, as well as the cuirass, have both reappeared among those nations especially, which have been most active in the great wars of the century. The opinions of military writers who present peculiar systems of their own, and oppose the use of the lance on merely theoretical grounds, should, therefore, be received with watchful caution. Both in the Peninsula and during the Russian campaign, the lancers effected remarkable results. At Albuera, the French lancers, getting into the rear of an English division under cover of a mist, carried destruction into its ranks, and left an awful impression of the power of that weapon, then almost unknown to the British soldiers. At Leipsic, in 1813, the long lances of the Russian Cossack guard, under Orloff Denizoff, told very severely even on the French cuirassiers. At Eylau, again, six hundred Cossacks of the Don, under Platoff, restored the battle, showing the advantage to have been wholly on the side of the lance; and its effects at Waterloo, where a regiment of French lancers, under Colonel Bro, almost entirely destroyed the Household and Union brigades, were much more severely felt by the English than the repeated charges of the cuirassiers.

Since then, England also has its regiments of lancers; and in many armies of the continent, the lance is now given to the front rank of the cuirassiers, the rear rank retaining the sword for service during the mêlée. Here, then, we have a virtual return to olden times, and the revival of a custom, a last trace of which we find in the following letter of Oliver Cromwell, in which he gives an account of the battle of Dunbar: "The dispute on this right wing was hot and stiff for three quarters of an hour. Plenty of fire from field pieces, snaphaunces,

matchlocks, entertains the Scotch main battle across the Brock; poor, stiffened men, roused from the corn shocks with their matches all out. But here on the right, their horse, with lancers in front rank, charged desperately; drive us back across the hollow of the rivulet; back a little; but the Lord gives us courage, and we storm home again, horse and foot upon them, with a shock like tornado tempests; break them, beat them, drive them all adrift."

The hussars, as before stated, originated in Hungary, where they had done good service against the Turks. When peace had closed their labors there, they sought employment elsewhere, and so proficient were they in rendering themselves useful, that they were in great demand, and every prince of note desired at least a few squadrons of them in his army. Thus the genuine Hungarian became scarce, and Poles, Bohemians, and others were gradually received as admissible substitutes, until, at length, it was observed that it was not necessary to be a Hungarian to become a good hussar, and consequently experiments were made with native regiments, and so successfully, that at one time hussars threatened to absorb all other kinds of cavalry. Undoubtedly their well-earned reputation for bravery, dash, and daring, together with a traditional vein of roguery, contributed not a little to this. It would fill volumes to describe the valorous exploits of these bold troops, whose duties Mahan, with his usual terseness, thus describes: "The dashing, bold hussar, that epitome of military impudence and recklessness at the tavern, should present those qualities in a sublimated form on the field. Regardless of fatigue and danger, his imagination should never present to itself an obstacle as insurmountable. On the march, constantly at the enemy's heels; in position, keeping him at all moments on the alert, harassing him either with fatigue or apprehension for the security of his rear and communications; on the field, career-

ing with a falcon's speed and glance upon his quarry, however it may seek to elude his blow; such should be the hussar."

The great reproach against hussars at all times has been their fond indulgence in extravagant finery. Even in the days of Gustavus Adolphus, the imperial hussars were most sump-

Fig. 78.

tuously equipped. Not only the head gear of their horses, their pistols, sabre, and tasche, but also the buttons on their pelisses and jackets, were of solid silver, and these were but a part of their expensive decorations; herons' feathers adorned their caps. The Polish hussars, also, in the reign of Charles XII, appear to have been equally ambitious of display. "They

march," says Voltaire, "attended by several valets, who lead their horses, caparisoned with bridles plaited with silver and silver nails, embroidered saddles, whose bows and stirrups are either gilt or made of massive silver, with large housings trailing in the Turkish fashion." Something similar yet appears in the Emperor of Austria's body guard, whose splendid equipment and purely parade duty have obtained for them the sobriquet of silk hussars. But nothing can equal the glaring gaudiness of some English hussars, whose toggery and tawdry dress have drawn forth the following sensible remarks from one of their own countrymen: "It seems decreed that the hussar is ever to be a popinjay, a show of foreign fooleries, so laced and looped and braided, that the uninitiated bystander wonders how he can either get into his uniform, or come out of it. A woman's muff upon his head, with something like a red jelly bag at the top, has been substituted for the warrior's helm; and the plume, so unlike the waving horsehair of the Roman casque, would seem better fitted for the trappings of the undertaker than the horseman's brow. The first time I ever saw a hussar was at Ghent in Flanders, then an Austrian town; and when I beheld a richly decorated pelisse, waving empty sleeves and all, from his shoulders, I never doubted that the poor man must have been recently shot through the arm; a glance, however, upon a tightly braided sleeve underneath, made it still more unaccountable; and why he should not have had an additional pair of richly ornamented breeches dangling at his waist, as well as a jacket from his shoulder, has, I confess, puzzled me from that time to the present, it being the first rule of health to keep the upper portion of the body cool and the lower as warm as possible. Surely a horseman's waterproof cloak, made to cover from head to foot the rider and his saddle, with his arms and ammunition, to be his protection against the pouring deluge, his screen and cover in the night bivouac, is the only

equipment of the kind the country should be called upon to furnish or to suffer. Man millinery in any shape is an abuse and prostitution of the English character. Borrow and copy from foreigners whatever may be truly valuable in arms—it is right and fitting to do so; but let us dress ourselves in serviceable garb, that fears no stain, nor needs a host of furbishers to keep it in order." (W. Fergusson, "Notes and Recollections of a Professional Life.")

This vanity of dress and overweighting of light cavalry horses in England is thus severely censured by General Sir Charles Napier: "The hardships of war are by our dressers of cavalry thought too little for the animal's strength; they add a bag with the Frenchified name of valise, containing an epitome of a Jew's old-clothes shop—notably so, if the regiment be hussars, a name given to Hungarian light horsemen, remarkable for activity, and carrying no other baggage than a small axe and a teakettle to every dozen men. Our hussars' old-clothes bag contains jackets, breeches of all dimensions, drawers, snuff boxes, stockings, pink boots, yellow boots, eau-de-Cologne, Windsor soap, brandy, satin waistcoats, cigars, kid gloves, tooth brushes, hair brushes, dancing spurs; and thus a light cavalry horse carries twenty-one stone. Hussars our men are not; a real hussar, including his twelfth part of a kettle, does not weigh twelve stone—before he begins plundering. The heavy cavalry horse, strange to say, carries less than the light cavalry, only twenty stone!! A British regiment of cavalry on parade is a beautiful sight: give it six months' hard work in the field, and while the horses fail, the men lose confidence; the vanity of dress supersedes efficiency."

Another kind of light horse greatly esteemed in France is the chasseurs à cheval. The earliest mention made of chasseurs is in 1742, in the Fisher legion, which greatly distinguished itself in the Seven Years' war; but their name does not

officially occur until 1760, when some of them, armed with superior weapons, were attached to each regiment of hussars. In 1776, when the number of dragoon regiments was increased to twenty-four, each received an additional squadron to serve as scouts and skirmishers. In 1779, these twenty-four squadrons were withdrawn from the dragoons and formed into six regiments of chasseurs by themselves. In 1786 the number was increased to twelve; and in 1796, in consequence of their bravery and good conduct, to twenty. Napoleon had a special liking for them; and in 1813, the French army counted

Fig. 79.

no less than thirty-four regiments of chasseurs à cheval. Sword, pistol, and carbine were their appointed arms, until

one squadron per regiment was equipped with lances; but this diversity of armament in the same regiment causing great inconvenience, six of the regiments were converted into lancers in 1832. They compose a body of smart, strong, nimble, active, and intelligent men, and are uniformed somewhat in the fashion of hussars, but with much greater simplicity.

The French recount with pride the daring exploits of these troops in Spain, Portugal, Italy, and Germany; and their veterans still exult in the name of Shee, who was one of the powerful colonels of the Empire. It was he who, in 1812, at Casares, at the peril of his life, extricated General Foy when surrounded by two English regiments. At Peneranda, also, and at Truxillo, he covered himself with glory, and at Nava del Rey he captured the famous guerilla chief Don Julian and his whole band. In 1814, near Bar-sur-Aube, at the head of his chasseurs, he saved part of the army, turned by masses of the enemy's infantry and cavalry. In this affair one of his captains captured and brought in eight pieces of cannon. In reading the history of the Peninsular wars, our admiration is enkindled by the splendid portraits of the heroes of so many conflicts, limned by the vivid pen of Foy; prominent among them is that of a gallant and noble-hearted Irishman; this Irishman is Colonel Shee. Always foremost in battle, and skilful in planning an enterprise, he held the first place in council, as by his daring and dauntless courage he was the first soldier of his regiment. The chasseurs à cheval have illustrated their valor on a thousand battle fields: in America, for liberty; in Europe, for honor and the independence of their country; in Africa, for glory and the preservation of their conquests.

After the subjugation of Algeria the French had to provide, against the fleet and numerous Bedouins, a cavalry equally light, powerful, and swift. In 1831, they organized for this service some squadrons of mounted zouaves and chasseurs

Algeriens, which were soon transformed into the famous chasseurs d'Afrique, of which France has now four regiments. This corps at once became exceedingly popular in the army. Officers desirous of active service were anxious to obtain com-

Fig. 80.

missions in the regiments, and the best men considered it a high favor to be admitted into the ranks. The unremitting warfare against the splendid but undisciplined horse of Abde Kader proved for them an excellent school of cavalry; and s well knew they how to profit by its lessons, that when they made their appearance in the European battle fields of th Crimea and Lombardy, they elicited universal admiration, an were hailed as the first light cavalry of the world.

They are mounted on barb horses, now acknowledged the best warhorses in existence, and thus described by Berenger: "Their forehand is long, slender, and badly furnished with mane, but the neck rises distinctly and boldly out of the withers; the head is small and lean; ears of good size, and well placed; shoulders light, obliquely sloping, and broad; withers thin and high; loins straight and short; flanks and ribs round, well developed; haunches strong; croup somewhat too long; quarters muscular and full; legs clean, and the tendons clearly marked and separated from the bone; pasterns rather long and slanting; feet sound and of good shape. In size they are seldom larger than the Arabs, and if they have not so much spirit, speed, and endurance, as an army horse and for service in the ranks they are superior." The men are armed with a sword, pistol, and long carbine, and their dress and equipments are the most suitable and probably the most simple used in any service.

In Algeria, France has, moreover, several regiments of native cavalry, called spahis, which also, on many occasions, have done good service. They wear the Arab costume, and are armed as the chasseurs d'Afrique, excepting the sabre: they carry this on the saddle, which, like their other horse equipments, is in the Turkish fashion; see Figure 81. From the rank of captain upward, their officers are French; below that, they are French and natives in equal number. Spahi, in Turkish sipahi, in Persian sipahee, transformed in English into sepoy, was formerly the name of the mounted men whom the owners of military fiefs were obliged to furnish, and who formed the élite of the cavalry in the Turkish army. But since the reorganization of that army on a European basis, and the suppression of military fiefs, these have been replaced by regular cavalry. Their usual arms were the sword, lance, and djerrid, in addition to which some had pistols and carbines, others bows and arrows. They formed a band of horsemen lacking every element of tac-

tics and organization, moving in hordes, attacking with savage intrepidity, and scattering also in the most barbaric confusion the moment their attack proved a failure. But, though irregular and undisciplined, they were exceedingly redoubtable, especially those inhabiting Mount Hæmus. "These are accustomed from their infancy," says Alison, "to climb the wooded

Fig. 81.

declivities of their native hills, and early acquire an extraordinary skill and hardihood in the management of their horses. A spahi will often ride at full gallop up hills, over torrents, through thick woods, along the edge of precipices, or down steeps, where an European cavalier would hardly venture to walk. This extraordinary boldness increases when they act

together in masses. When so assembled, they dash down rocks and drive through brushwood in the most surprising manner. No obstacles intimidate, no difficulties deter, no disorder alarms them. The attacks of such bodies are in an especial manner to be dreaded in rugged or broken ground, where European infantry deem it impossible for cavalry to act at all. The heads of two or three horsemen are first seen peering through the brushwood or emerging out of the steep ravines by which the declivities are furrowed. Woe to the battalion or division that does not instantly stand to its arms or form, on such vedettes appearing. In an instant five hundred or a thousand horsemen scale the rocks; with loud cries they gallop forward upon their enemy; the Turkish scimitar is before their horses' heads, and in a few minutes a whole regiment is cut to pieces."

Such were the Turkish horsemen of Mount Tabor and the Pyramids, whose daring characteristics mark also their Asiatic brethren the Cossacks, who, in 1813, had acquired a more regular organization, by means of which they frequently broke squares and performed all the duties of regular cavalry. "But they shone as light troops. Mounted on their hardy little horses, they have frequently been known to travel a hundred miles in the twenty-four hours, loaded with arms and plunder, and in the heaviest marching order they plunge into rivers, tread morasses, explore thickets, and cross the most fearful deserts, whether parched by the heats of summer or charged with the snows of winter. No army, with the Cossacks in its front, need fear a surprise; none, with them heading the pursuit of it, can escape one; their velocity, activity, and courage render them peculiarly dangerous to a retreating, often fatal to a flying enemy. When the rear guard halts, and a respectable force collects to oppose their incursions, they never hazard an attack, but fly without hesitation, like the Parthians of old, till a more favorable opportunity of renewing the pursuit occurs; and

when the enemy again retires, they press upon his retreating columns, inundate the country on all sides of his line of march, and are frequently to be seen a hundred miles in advance of the main body of the pursuing foe."

82.

The history of the wars between 1812 and 1815, in which the Cossacks played so conspicuous a part, has renewed the old dispute upon the question whether regular cavalry will in the end get the better over an irregular one, which will avoid all serious encounters, disperse at speed when worsted, and return to the combat with the same rapidity, never leaving the enemy

rest, and wearing out his strength by continual skirmishing. We have seen Napoleon's views on the subject, in reference to the Mamelukes; and Russia, which is most interested in the question, seems to have given it a practical solution, by raising several regular Cossack regiments, in all respects alike to the rest of its regular cavalry. "Experience," says Jomini, "has shown that irregular charges may cause the defeat of the best cavalry in partial skirmishes; but it has also demonstrated that they are not to be relied upon in regular battles on which the fate of a war may depend. Such charges are valuable accessories to an attack in line, but alone they can lead to no decisive results."

Dragoons, who, as we have seen, were, at their origin, merely mounted infantry, have always, in the course of time, been transformed into cavalry. In 1804, Napoleon desired to repeat the experiment, and ordered his dragoons to be trained both for foot and mounted service, but they invariably failed; it was only after he had removed their musket and bayonet, that they became those terrible warriors who so nobly distinguished themselves in Spain and during the latter struggles of the Empire. In all ages infantry has been occasionally mounted for special enterprises requiring rapidity, and many believe that every army should have a few regiments regularly trained for such double duty. But the difficulty is in keeping them infantry, and in repressing their ambition to become cavalry. Napoleon, in his "Memoirs," sketches a plan for mounted infantry to serve as scouts and skirmishers, and as orderlies for generals and staff. He arranges to provide them with very small horses, that they may not tempt the cavalry generals, and at last merge into cavalry.

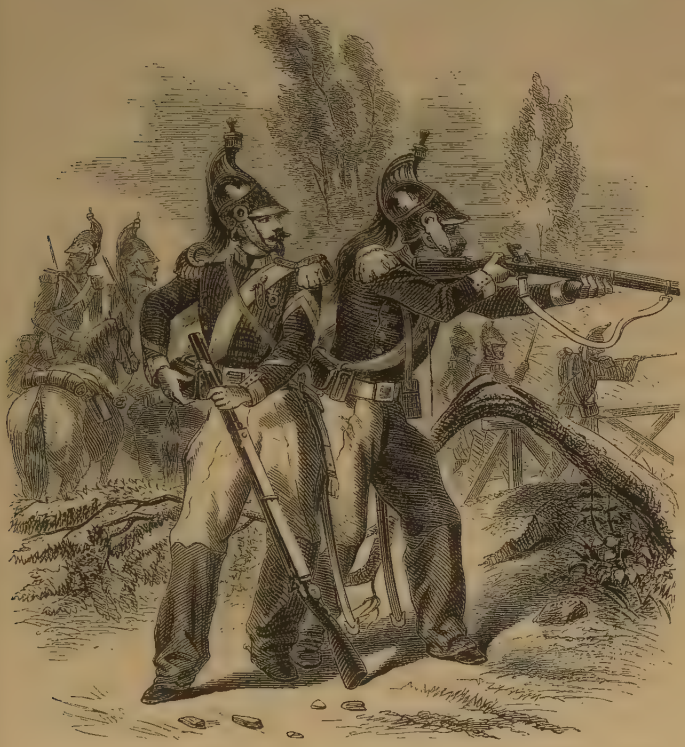
The creation of hybrid dragoons was again attempted in 1833, and on a large scale, by the Emperor Nicholas of Russia. With all the resources at his command, the greatest pains were

taken to develop the organization to its utmost practical perfection, and to insure the success of this extraordinary corps. It consisted of eight regiments of ten squadrons each. Eight of these squadrons were armed with musket and bayonet, and were intended to fight as infantry; the remaining two were armed with heavy lances, and composed the cavalry. The former, being dismounted, constituted a battalion of eight platoons in three ranks, each squadron furnishing a platoon, the No. 2 of each group of three remaining mounted to hold the horses. The two squadrons of lancers of each regiment then came together and formed two regiments of cavalry, of eight squadrons each. To these were added the necessary artillery and pontoniers, in order to form a complete corps, consisting of eight battalions of infantry, sixteen squadrons of cavalry, thirty-two pieces of cannon, and sixteen pontoons, in all fifteen thousand men. Although most perfectly trained and thoroughly drilled in all the details of their mixed service, they proved unavailing, and have been abolished by the present emperor. After such an unsuccessful experiment, it is not likely that any government will again attempt the formation of mounted infantry. Mounted riflemen were discontinued in the United States about the time dragoons were abolished in Russia. It must be observed that the term "dragoon" is often used in English to denote a cavalry soldier in general, and that in those countries which maintain regular regiments of dragoons, the name does not in any wise imply dismounted service; the heavy dragoons being simply cavalry of the line; the light, corresponding with the chasseurs à cheval above described.

The causes of the invariable failure of dragoons will be better understood if we estimate the time needed to educate a cavalry soldier, and add to it the time required to form an infantry soldier. Even if we should succeed during seasons of peace in bringing a body of men thoroughly to understand the

duty of both, how could we keep such hybrid regiments complete during the urgencies and casualties of war? How could we then find time for their long double drill and training? Moreover, a regiment of mounted dragoons brought into action is less numerous than a full infantry corps opposed to it; the

Fig. 83.



long swords and spurs of the dragoons are in their way, particularly in skirmishing; and should a few of the enemy's light cavalry make a dash at the led horses, there is every probability that the dragoons would remain foot soldiers during the residue of the campaign. Dismounted horsemen have done good service in covering a retreat, in defending defiles and

passes against cavalry, and in pushing forward to seize bridges, and halting to maintain them; but they would be quite incompetent to storm positions or take part in line of battle with the infantry. "Besides," says Marshal Marmont, "a troop should have its creed, its convictions, its faith, resulting from established principles, and even from prejudices, immovably fixed in its affections; and care should be taken not to perplex the intelligence of the soldiers by inculcating conflicting opinions, and gravely teaching them, when they are exercised as horsemen, that cavalry must always triumph over infantry, and again, when the hour for drilling on foot arrives, that an effective infantry is invincible by cavalry. These lessons, when applied, recur to their minds almost always inversely; as foot soldiers, they remember how cavalry is to be dreaded; as horsemen, they do not forget how fearful is infantry." Even two and a half centuries ago, Captain Walhausen laid a very low estimate on dragoons; he thought them an awkward and ridiculous contrivance, and such they have ever proved themselves to be, under whatever form or name they have been attempted since.

Some tacticians think it better to have only one kind of cavalry, but they by no means agree in resolving how and what it is to be. Indeed, their views differ so very widely, that the sum of them would produce a splendid and well-assorted cavalry of all descriptions, heavy, light, and mixed. In an inconsiderable army it would palpably be the height of absurdity to employ as many different kinds as there are regiments; but in a numerous cavalry, it is as impossible to have all of one kind, as it would be ridiculous to diversify them where their number is small. A few regiments may procure a choice of horses at home or in the neighboring countries; but when cavalry forms a fourth, a sixth, or even a tenth part of a large army, it is very far from an easy task to keep it properly mounted, especially in

time of war, when losses and other contingencies press the government to purchase every suitable horse it can procure, without regard to size. In armies provided with remount depots, all horses bought first pass through them, and thence are sent to the different regiments, according to their classification into light or heavy; otherwise, every regiment simply receives the required number, and mounts its men, according to weight and size, as it best can. But as horses of different size and power will not work well together, a natural distinction soon enforces itself, and the lighter men and horses will be employed in preference as scouts and skirmishers, while to the heavier will be assigned the duties of attack in close order; the former will furnish the flanking columns, the latter form the line. When several regiments act together, the same disposition will be made for brigades and divisions; until some general, feeling the inconvenience of collecting these incongruous parts of squadrons and regiments, and of placing them under the order of chiefs not permanently their own, will remove all the light platoons and squadrons from their respective organizations, and consolidate them into separate bodies of light horse, to be used wherever necessary, at the will and discretion of the commanding general. Some may deem the regimental arrangement preferable; even we have lately seen volunteer associations industriously raising their own cavalry and artillery, with cannon of every description, so as to be ready for all emergencies; but no sooner are they obliged to coöperate with other masses, than it becomes manifest that unity of action will not allow any such fractional arrangements in an army, and that the highest degree of efficiency can be attained only by a distinct and separate training of each several department, according to the nature of the service for which it is intended.

The different theories respecting the formation of cavalry are as numerous as the points of view from which the subject

may be considered. Some urge large regiments, others smaller ones; some subdivide them into squadrons, others into troops; some form two companies into a squadron, others two squadrons into a division; some manœuvre by threes, others by fours; some distribute the squadron into three, others into four platoons; but all aim at one and the same object, which is to attain the greatest amount of mobility and power, combined with the greatest possible order and simplicity of execution. An essential difference, however, is the place occupied by the officers—whether in front of the troops or in the ranks; and is thus remarked upon by General Von Bismark: "Officers of cavalry should on all occasions be in front, and only on a retreat should a colonel or squadron leader remain in the rear, that is to say, on the side next the enemy, in order to observe him and be master of the moment. Those who prefer to place officers of cavalry on the flanks of the divisions assign as a reason that the front thus appears clearer and better; but, conceding this, utility alone should determine the arrangement. The officers are the leaders, the souls of the line; they must therefore be placed where they can exert their influence freely and without hindrance. This is particularly necessary with such an arm as cavalry, which acts much more by moral than by physical forces. Officers placed in the line can no longer be regarded as leaders; they are merely fellow combatants. That the officers in front are exposed to greater danger must not be accepted as a valid objection, for we should entertain no very high opinion of an army in whose formation care was taken for bringing away the officers unhurt. But the pretext is in itself an idle one, for there can be no protection against bullets except good luck. On the other hand, the advantages of a formation where the officers occupy the front of the line are self-evident; for there, as it may be said, they govern the front. If the leaders are brave, which we must assume, the

whole line will be brave; the officers, conspicuous to the men under their command, appear now most brilliant at the charge; the line in rear of them becomes their judge. The honorable ambition of being applauded by the ranks urges them forward, and they become, what they ought to be, inspiriting examples to the soldiers."

But of all differences respecting formation, the most important is that which relates to the number of ranks. After the lapse of various epochs, and since we have gone back from deep to extended formations, it has been at last decided that the front rank alone effects the charge; that no weight or after charge can be contributed by troops placed behind; and that the rapidity is not increased by the pressure of those who follow, as with infantry. The practical result of this decision is that the cavalry of all the European nations is now formed on two ranks. As early as the time of Louis XIV, the losses incurred by some regiments obliged him to dispense with the third rank, and similar reasons in later times have necessitated an occasional formation in one. Some English tacticians have gone even further, and recommended the permanent adoption of a single-rank system, which was practically tried for the first time in 1833, by General Bacon, in Portugal, where he commanded the cavalry of Don Pedro.

This view, however, has found but little favor in continental Europe. It is urged against it that single-rank men have no backers sufficiently near to inspire them with confidence and perseverance, and that not the men alone, but the horses likewise need the influence of this confidence to induce them to rush into the fire: moreover, that, however good cavalry soldiers may be, they are not all fit for the front rank, neither are all horses fit to lead, though all will follow. Broken up in a mêlée, the single ranks—men being equal—would be overpowered before they could receive assistance, and the single-

rank reserves would in like manner be overwhelmed by double-rank reserves. General Bacon, regarding the lance as the best weapon for a cavalry soldier, recommends its use in connection with the one-rank system. But if we compare the trifling successes of a squadron or two, on which he bases his arguments, with the terrible combat at Ratisbon, mentioned on page 344, it seems doubtful whether in the mêlée ordinary lancers in single rank could at all cope with cuirassiers in double rank, especially as in some armies the front rank now carries lances.

Still, this new system has found advocates among the most distinguished cavalry officers both here and in England. The following letter from the Duke of Wellington, addressed to Lord William Russell, in 1853, expresses his opinions on the subject, which are not only interesting, but, proceeding from so high an authority, are entitled to the most careful consideration :

" Although I suppose that it will never happen to me again to have anything to say to the discipline of the troops, I have passed too many years of my life in relations with them, and in reflections upon what was good and useful to their discipline and movements, not to feel an anxiety relative to the formation of the cavalry.

In my opinion the cavalry is useful, and even safe, only by the use of very large reserves. It is essentially an offensive arm, whose efficiency depends upon its activity combined with its steadiness and good order. I think that the second rank of the cavalry, at the usual distance of close order, does not increase its activity. The rear rank does not strengthen the front rank, as the centre and rear ranks do the front rank of the infantry. The rear rank of the cavalry can augment the activity or even the means of attack of the front rank, only by a movement of disorder.

If, then, the attack of the front rank should fail, and it should be necessary to retire, the second or rear rank is too close to be able to sustain the attack or to restore order. The second rank must be involved in the defeat and confusion, and the whole must depend upon some other body, whether of cavalry or infantry in reserve, to receive and protect the fugitives.

I have already stated that the second or rear rank can augment the means of the first rank only by a movement of disorder. This is peculiarly the case if the attack should be successful. In all these cases the second rank—at a distance sufficiently great to avoid being involved in the confusion of the attack of the front rank, whether successful or otherwise—could aid in the attack, or, if necessary, cover the retreat of the cavalry as a body; while by the absence of all impediments from the closeness of the rear rank, the activity of the front rank would be increased.

But my opinion always has been that the whole practice of the cavalry ought to be one of reserves. I thought that the cavalry at two deep ought never to appear but in three lines. At one deep it follows that, if my reasoning be correct, three lines would still be sufficient; but I should be inclined to say that four or six lines would be preferable to a smaller number.

The facility of movement is so great, and the use of the arm can be rendered of so much importance by the aid of artillery, that I should have no apprehension of not being able to bring up the lines from the rear to the front or to a flank, and to apply them to the most useful purposes of attack, if necessary: at the same time it cannot be denied that, till required for the actual attack, the less they are exposed the better. My notion of the distance of the lines of cavalry was, as much as a cavalry horse could gallop in a minute. I would have the second line pull up at a walk when the first should charge;

the third line, always in column, should deploy at the same moment, and then act as ordered for the second line, in support of the first: the supernumerary lines beyond these should all act as ordered for the third line.

In Napoleon's great battles, he never charged with masses of cavalry. He used his cavalry, supported by great masses of artillery, to seize positions; and he afterward occupied them, with his infantry or his artillery, to operate on the morale of his enemy by turning a flank, or occupying a post in the centre of his army with celerity. He tried this maxim in the battle of Waterloo, but the British infantry was too steady, and it did not answer. In all these operations the first movement of the cavalry is offensive, and the proper movement of that arm.

But after the position is seized the cavalry becomes defensive. Its order, depth, the removal of the great body of it from the effect of the fire of the enemy, the security of the flanks from the attacks of the enemy's cavalry—all become important, and can be only attained by reserves.

I conceive that the one-rank system would require a change, not only in the discipline, but in the organization of the cavalry. If I am not mistaken, it would render the use of cavalry in an army much more general than it is at present."

The one-rank system has been lately adopted in principle for all cavalry in the army of the United States; but the introduction of the new tactics, founded on this system, has been wisely postponed to some more favorable period.

# CHAPTER VII.

## SOLDIERS AND OFFICERS.

The necessity of a system of national defence being granted, the question arises, who shall compose the army, and by what means shall it be kept complete and efficient. The solutions which this question has received among the various nations, vary with their character, their social and political constitutions, and especially with the different epochs of the world's history.

In Egypt, military service was conferred as a privilege upon a certain class, and property qualification was required of every man before he could be intrusted with the defence of his country. Even the common soldier must possess not less than six acres of land, which served for the support of his family, and which were free from taxation. The forces of the Greeks also consisted chiefly of free citizens, who were early trained to arms, and, after attaining a prescribed age, were subject to actual service in war. Those who had reached the age of forty were released from this duty, except in cases of very urgent danger. Some were also wholly or temporarily exempted on account of their office or employment. Originally the warriors maintained themselves, and every free citizen deemed it a dishonor to serve for pay, which the spoils of victory, however, to some extent, supplied. But the disorders incident to this method

led to the system of stated remuneration, which, under Pericles, was for infantry four oboli per day, or about twelve cents, and for cavalry one drachm, or about eighteen cents of our money.

At Rome no one was admitted into the army under seventeen years of age; all between seventeen and forty-five years were enrolled among the class of younger men, and liable to service; while those over forty-five were ranked among the elder men, and exempt from military duty. The legal term of service was sixteen years for infantry and ten for cavalry; it was rare, however, to be employed for this number of years in succession, and whoever, on attaining the age of fifty, had not served all the prescribed time, was nevertheless excused from the rest. In protracted wars, four years were sometimes added to the customary term, and under the emperors, twenty years became the stated period. Citizens liable to military duty must appear at the appointed time, or forfeit their property and liberty. Persons without property were not included in the rule of requisition for service, for, having nothing to lose, they were accounted devoid of patriotism. As all the soldiers were Roman citizens and free born, the military rank was in high esteem, and their peculiar rights and privileges were known under the name of jus militiæ.

As in Greece, so in Rome, the soldiers at first received no pay, nor were wages given to foot soldiers until 405 B. C.; nor to horsemen until three years after, the latter consisting chiefly of the noble and the wealthy. Each soldier then received a monthly allowance of two bushels of wheat, and a daily stipend of three asses, about four cents and a half of our money, which was afterward largely increased. Cæsar doubled it, and under the emperors it sometimes rose still higher. In some cases the wages of individual soldiers and even of entire bodies, were doubled as a special reward. Whatever a man saved could be

deposited with the standards, until the whole term of service had expired.

"After the invasion of the Barbarians, and the overthrow of the Roman power, all special military organization disappeared in Europe. For many centuries armies had no other basis than that of feudal constitution. But when experience had demonstrated the weakness of these temporary assemblages of men, hastily gathered, and as suddenly dissolved, either by the caprice of the lords or the urgency of their wants, and therefore incapable of any operation founded upon calculation, they began to think of creating regular and permanent means of power. The sovereigns, however, though invested with the legal right, were yet without actual control over their vassals. In order to free themselves from this uncertain dependence, as soon as the state of their finances warranted it, they proceeded to constitute their own soldiery; and this was the origin of the compagnies d'ordonnance.

But regular revenues were needed for the maintenance of troops and arms; regular revenues, however, spring up amid order and a settled administrative organization, and thus the creation of armies became at once the cause and means of reviving civilization. But the feudal system had so thoroughly subjugated the masses of the people under the dominion of the lords, that the latter were far from favoring the establishment of troops destined to overthrow their sway; while the sovereigns, being supreme only in their private domains, which were very limited, were forced to resort to compensated voluntary enlistment to secure soldiers for their service.

The disorders which pervaded Europe, the constant wars which ravaged it, and the multitude of petty sovereigns that dominated it, rendered the people wretchedly poor, and presented the soldier's trade as a resource to them. The custom of the age, moreover, allowed every one to indulge in hopes

of an unlimited ambition. A warrior might aspire to anything; and his combinations had no other element than his own personal interests. His motive then was not, as now, the simple purpose of fulfilling a duty toward his sovereign, of defending his country and gaining glory, that reward of public opinion in our days. Soldier or captain, each one craved riches, and often raised his pretensions as high as sovereignty. The Visconti, the Sforzas, the della Scalas, the Eccelini, and many others had no nobler origin, and before them, kingdoms had fallen a prey to Norman adventurers. Sovereigns, to facilitate the execution of their projects, were all obliged to employ as intermediaries, officers of credit and renown, who, having been engaged in that profession from early life, were acquainted with many men able to aid them, and willing to share their fortunes. Each of these had his clients, and regiments were furnished by contract and competition.

Ferdinand II sent for Wallenstein, and asked him for an army. Conditions were discussed, and a treaty concluded. The latter called for those officers who had his confidence, and asked them for regiments, associating them in his emoluments. These again found captains who could form companies and muster soldiers; and the army was created. It is thus that in our day, a sovereign negotiates a loan with some rich influential banker, who distributes the greater portion of it among his correspondents, giving them a share in the profits which he expects to realize; and they, in their turn, seek for the sums they need, in the purses of private individuals. One may understand how such a process gave to the regiment which a colonel had organized, the character of a property. Hence the names they received, and still retain in Austria, where, although they have become, as elsewhere, the regiments of the sovereign, they nevertheless maintain, in some sort, their original character, and preserve their own special constitution and privileges.

Moreover, the system there pursued, which has harmonized the institutions with the interest of the state and present customs, offers a noble and magnificent reward to generals whose lives have been rendered illustrious by glorious service, and at the same time guarantees to the sovereign the proper selection of officers, and a good spirit in the regiments.

And here we should remark the striking difference apparent in the composition of armies, now and in earlier centuries. Our present armies are raised by conscription, in all the continental states, but not in England, where special circumstances explain the retention of a system exploded everywhere else. Armies, in our day, are too large to depend upon voluntary enlistments to fill their ranks. Moreover, we no longer find multitudes of men, to whom military service is a last resort for their subsistence; public order, which everywhere reigns for the good of humanity, greatly diminishes this class; and lastly, the opportunities of making fortunes in this career have become too limited to induce men of position to choose it. Other employments are provided by the development of industry for all possessed of ardor and intelligence, and fortune may be found there without danger. Obligatory service is, therefore, the only means of securing the defence of the state, and thus a tax of blood has become everywhere one of the public charges.

The spirit of armies has been greatly modified by this; notwithstanding appearances it is far from having been injured by it. Voluntary enlistment, coupled with a terrible discipline, has sometimes, as in England, made good troops; but in respect of intelligence and morality, can we compare an army composed of young men nurtured in a spirit of order and obedience, with one, which, containing perchance a few individuals animated by the love of war and glory, consists, in much the greater part, of vagabonds exiled by their vices from a decent and industrious life? How much better is the public interest

secured, when confided to those who regard military service as a high and important duty! The young man who is designated by lot, peaceable in his habits, may leave his family with grief; but the warlike spirit, so natural to man, soon animates him; he then cherishes noble thoughts; he becomes greater in his own eyes; he is faithful, devoted, and finds in the good opinion of his officers and of his companions, the reward of his sacrifices, his labors, and his dangers." (Marmont, "De l'esprit des institutions militaires.")

There exist, thus, at the present time, two systems of recruiting—that of mercenaries, and that of national conscription. The former is distinguishable into two kinds; first, mercenaries by capitulation, that is, such as lend military service in virtue of a treaty made with a foreign government for entire regiments, and for a stipulated term of years, as the Swiss in France, Holland, and lately in Naples; second, individual mercenaries, enlisted by government agents, both at home and abroad, by means of private bargain. The latter was the customary mode of recruitment in Europe during the last century, but is now everywhere abandoned, except in England. The system of procuring mercenaries by capitulation is attended with great inconvenience and hazard, because they are really nothing but a species of condottieri, who serve those that pay the highest price, and who, in a crisis of danger, may abandon the cause for which they were engaged. As the system of mercenaries by private bargain gathers in but few others than the dregs of the people, an army thus recruited must be incapable both of enthusiasm and self-sacrifice. Plausible efforts have been made by those interested, to demonstrate the advantage of a method, which, while it fills the ranks with fighting characters, would leave the peaceable citizen to the quiet pursuits of civil life—lamentable advantage, which entrusts a nation's vital interests to the hands of the unworthy, who, like trained blood

hounds, can be prevented only by the most degrading discipline from turning their ferocity upon their masters. Truly, if we compare this system of recruiting with that of the ancient republics, where the people's national existence, their liberty, and all that was dearest to them, were confided to those who had the liveliest interest in their defence, the advantage cannot be with the former.

The inherent right which every society possesses to personal service from its members is undoubted; and since an army is instituted for the maintenance of its highest welfare, the obligation to military service is the most just and the most important of all those which are the consequence of social compact. The system of obligatory service, then, being the only one compatible with our present state of civilization, let us examine into the considerations by which its practical working should be regulated for the greatest benefit both of the people and the state.

The age at which young men are to be called upon to serve, should be fixed at that period when they may be supposed to be possessed of abundant physical strength to sustain the fatigues of war. This age is almost universally fixed at twenty or thereabouts; to require earlier service from them would ruin their health, and fill the hospitals rather than the ranks.

The next point to be determined is the duration of service. This involves two conflicting interests: that of the army, which would keep the trained soldier as long as possible with the standards; that of the people, which would abridge as much as possible the term of military service. The elements of compromise are contained in the following considerations: First, they consult the military spirit of the nation; the customary and prescribed training which the young men undergo in school, their physical and intellectual aptitudes, and consequently their fitness for military instruction. Secondly, deducting the time

required for instruction in each of the three arms, infantry, cavalry, and artillery, the duration of service is then fixed in such a manner that the state may have, for a certain length of time, the benefit of their proficiency, reserving the power of calling upon them, as well qualified soldiers, for several years afterwards. Thirdly, the training and instruction of the soldiers should also have a view to their welfare after leaving the ranks, and they should return to civil life young enough to create for themselves a favorable position, and secure an independent future.

"It has been observed," says Rogniat, "that man, when verging toward the age of thirty, begins to lose his suppleness; movement ceases to be agreeable to him; the effervescence of youth, which caused him to find charms in a wandering and eventful life, subsides by degrees, to make room for ideas of tranquillity and repose. Having reached that age, he has, therefore, become less fit for the duties of a soldier." This argument is evidently inapplicable to officers, on whom other duties and responsibilities devolve; but it serves to show that under ordinary circumstances the state has no interest in retaining the services of men over thirty years of age, and it may therefore suggest a first basis for the duration of military service. In Prussia this time is five years; in France, seven; in Austria, eight; in Russia it has been twenty years, but lately it was reduced to fifteen, and very probably, ere long, will be reduced again.

The third consideration relates to the number of men annually to be called into service. This varies with the condition of the country and requirements of the moment. In constitutional governments, such as France, Belgium, and Holland, the legislative power determines the number; in absolute monarchies, such as Russia, Austria, it is fixed by royal decree. Under ordinary circumstances it is equal to the number of men

composing the standing army, divided by the duration of service. In Prussia, for instance, where the standing army consists of 125,000, and the time of service is five years, the annual contingent is 25,000 men.

The fourth question refers to the mode of raising the annual contingent. When the number has been determined, it is apportioned among the different townships, in the ratio of their population. Those who are to form part of the levy are designated in various ways: in France, by lot, to prevent fraud or undue influences; in Prussia, by selection; and in Russia, it was by the will of the owners of the serfs. Choice may, perhaps, possess some advantages which lot does not, but the gross abuses to which such a method naturally tends, forbid it even a moment's attention in this country.

These are the main considerations that determine the laws of conscription, which is now universally adopted in continental Europe, with such modifications as may be suggested or required by the political institutions and peculiar circumstances. These modifications relate chiefly to the details of exemption and dispensation. Exemption is of two kinds: the first, in the interest of the state; the second, in that of the families. The state declines young men who have not the size, strength, or ability to bear arms, and rejects those whom immorality disqualifies from service in the army. The families are entitled to retain among them such as are necessary for the support of aged and infirm parents, and also those whose brothers are already in the army, or have been killed or mutilated in combat. Families to whom these belong, have manifestly paid a liberal share to the welfare of the community. Young men who destine themselves to professions which confer especial benefit upon the state, such as the priesthood, public instruction, &c., are entitled to a dispensation only, which differs from exemption, inasmuch as the latter is final, and the former

conditional; dispensation expiring with the reason for which it was granted.

When the state enjoys a profound peace, and there is no occasion to continue the men in service during the whole of their term, they may be dismissed on furlough, after two, three or more years of active duty, according to the decision of the legislative power. But young men thus provisionally released, still remain subject to the call of the government, until the time of their final liberation, either for annual drill, or to rejoin the army, as the case may be. In time of war, final liberation is allowed only after the new levy has received its instruction, and joined the forces in the field, in order that the ranks may not be suddenly deprived of the best soldiers, without others to occupy their place. See pp. 34, 35.

Connected with conscription are voluntary enlistment and substitution or exoneration. Voluntary enlistment is a contract, by which an individual engages to serve the state for a specified number of years, determined by law. This contract is disinterested when, as in France, it stipulates no pecuniary advantage to the soldier; when any bounty or premium is given, the engagement belongs to the mercenary system. Substitution consists in a contract, made by individuals, and sanctioned by the state, allowing one man to serve instead of another for a covenanted sum of money. Although in principle it seems but just that every one should enjoy the right of pursuing that career to which his tastes incline, and in which, moreover, he may render himself useful to the state; yet the original mode of direct and actual substitution, except among relations, is decidedly objectionable, inasmuch as it involves some of the worst characteristics of the mercenary system, by admitting the abominable and degrading traffic in men. This has been obviated in Prussia by allowing to every one the privilege of a single year's active service, on condition

of equipping and maintaining himself at his own cost during that period, and joining the landwehr at its expiration. The expense thus saved is deemed sufficient to provide for the voluntary enlistment of others. In France exoneration may be purchased of the state for a sum of money determined by annual regulation, the amount of which is used as a fund for soldiers of good character, who have finished their regular term, and whom the state is willing to reënlist at a higher pay. This arrangement is especially advantageous for cavalry, where the horses require constant attendance, and where it is so important to maintain a large proportion of well-instructed and good men.

If a choice of persons for the composition of an army were practicable, it is not their size alone which should determine the selection. The Romans were not tall, and yet what people ever excelled them? If they achieved great things, it was because they united the qualities of the soldier with the virtues of the citizen. Courage, size, and physical vigor are certainly invaluable military traits; but to constitute the genuine warrior, those attributes must be associated with others not less sterling, such as sobriety, patience to bear up under privation, honor, and, above all things, a pure and fervent love of country. These are the only virtues that can exalt the military profession, which, without them, is too often defiled with gross excesses, as fatal to friends whom it should protect, as to the foes who are the real or reputed provokers of them. For this reason were the ancient republics so scrupulously cautious in selecting the men to whom they would entrust their destinies. As already observed, no one was deemed worthy to serve his country who was not personally interested in defending it. If modern institutions do not permit us to aspire to such a composition of our armies, at least let us have soldiers whose interests are identical with those of all other citizens. "In England,"

says Scott, "where it is the policy of the government to keep the army under the control of the aristocracy, they are logical in rejecting a system of conscription, and adhering to a sytem of recruiting which divides an army into two castes—the officer and the soldier. What possible reason can be given for adopting that system in the United States, is unknown."

As the cavalry service is more fatiguing and more active than that of infantry, it requires stronger and more vigorous men, better able to cope with the severer duties that devolve upon them. Their instruction is prolonged and difficult, and the continual exercises to which they are subject in ordinary times, as well as in the field, demand a more sinewy robustness and a firmer frame. Without admitting men of excessive weight and size, none should be accepted but those tall and powerful enough to groom and saddle their horses with ease, to bear heavy burdens of forage, and endure the fatigues of a long, often painful, and sometimes even dangerous instruction for feeble constitutions. The men, therefore, intended for cavalry service should be selected with the utmost care respecting their disposition, size, and vigor of constitution, and should, above all, be chosen from those who have been accustomed to horses from their youth, such as the sons of farmers, ostlers, and others who love horses, and are capable of taking care of them and likewise of the harness and equipments with which they are entrusted. From other men than these it is difficult, almost impossible, to form a good cavalry. What, for instance, can be expected from a stocking manufacturer, or a linen weaver, who considers the horse a wild beast? We all know that such men rarely have confidence in their horses, but look upon them as their greatest enemies, against whom, for the future, they must struggle for their lives. They never learn to ride, never can preserve their balance, but hang on the horse like a senseless lump, which, in order to preserve its equilibrium, unnecessarily

wastes a large portion of its strength, and on this account is soon exhausted.

The injudicious selection of men for cavalry may be productive of infinite mischief; it is chiefly owing to the unskilfulness of their riders that we so often find horses in a squadron, which even at the slowest pace, sweat and tire themselves exceedingly. The animal at last becomes refractory; he hangs upon the bridle, and, overcome by the pain of his mouth, curvets, rears, and bounds to escape suffering. The rider, whose fear and anxiety increase, clings still closer, and labors intently by sticking with knees and heels, to make the best of the struggle. Thus the quietest horse becomes at last passionate, and will endeavor to be rid of his burden or to run away. In this way one ignorant rider can often bring an entire squadron into disorder, which, in a charge, may lead to the most fatal consequences. Besides, a man who cannot manage his horse will be unable to do much damage to the enemy.

The time required to instruct a cavalry soldier in everything necessary to render him fit for duty, varies, according to circumstances, from nine to twelve months. During peace, with numerous and able instructors, well trained horses, and plenty of good examples around, he soon acquires military habits, and ought to be ready, after nine or ten months, to join the squadron. In time of war, however, when the best men and horses are in the field, and good instruction and good example are less attainable, his progress cannot be as rapid, nor his training as complete; and often, from necessity, long before he is qualified, he is transferred from the depot to the field squadrons, there to finish his education. It should be stated here that in most European armies, each regiment of cavalry has a separate squadron called depot squadron, which, with some, is a permanent organization, but with others formed only in time of war. When the regiment takes the field, this squad-

ron remains behind, and has charge of the magazines, barracks, stables, horse hospitals, &c. With it remain the master workmen—armorer, saddler, tailor, and bootmaker, together with the number of hands requisite to supply the regiment with everything it may need in the way of arms, clothing, saddlery, &c. It is here that the recruits and remount horses receive their first instruction, and whence the vacancies are filled, which may occur in the squadrons on duty in the field.

In order to form instructors, and to diffuse through the various corps a uniform system of instruction, there is generally a school for the special purpose of teaching everything relating to equitation, and such other branches of knowledge as are connected with the service of cavalry. In this respect, France is in advance of other countries, and, according to McClellan, the cavalry school at Saumur is the most perfect and extensive institution of the kind in Europe, "perhaps the only one," he says, "really deserving the title, the others being more properly mere schools of equitation." It is situated in a region where forage abounds, and where the climate is so genial that exercises in the open air are rarely interrupted. The organization and purposes of this school cannot be better explained than by the following extract from the Decree of Reorganization, October, 1853.

"I. The instruction of the cavalry school is entirely military, and is based upon the laws and regulations in force respecting the mounted troops. It includes:

1st. The cavalry tactics.

2d. The regulations for interior service.

3d. The regulations for garrison service.

4th. The regulations for field service.

5th. A military and didactic course of equitation, comprising all the theoretical and practical knowledge required for the proper and useful employment of the horse, his breaking, application to the purposes of war, and various civil exercises.

6th. A course of hippology, which, by means of the model breeding stud attached to the school, gives practical instruction in the principles that should regulate the crossing of breeds and raising of colts; it, moreover, explains the phases of dentition, and points out what conformation of the colt indicates its future excellence and power; it teaches the method of bringing it gently under tractable subjection, and finally familiarizes the officers and pupils with all the knowledge indispensable to those charged with the purchase and care of remount horses. This course also includes notions concerning the horse equipment, derived from an examination of the saddle factory connected with the school.

7th. Vaulting, fencing, swimming.

II. The number of horses is determined according to the wants of the service. The number of young horses for breaking is fixed at one hundred as a minimum. As soon as their training is complete, they are sold or given, according to the orders of the minister of war, to those officers who need a remount; in preference to officers of the general staff and staff corps, to those of artillery, and mounted officers of infantry.

III. The pupils at the school are:

1st. Officers for instruction.

2d. Sergeants for instruction.

3d. Corporals for instruction.

IV. The full number of the divisions of officers, sergeants, and corporals for instruction, is as follows:

| | | | | |
|---|---|---|---|---|
| Officers for instruction, | 2 | divisions, | . . | 100 |
| Sergeants | " 1 | " | . . . | 40 |
| Corporals | " 4 | " | . . . | 240 |

V. Pupils are admitted to the school by order of the minister of war. They continue to be counted in their corps, and receive additional pay.

VI. There are two courses of instruction, to each of which a year is assigned. Upon admission, the pupils pursue the first year's programme; when they have passed the examination at the close of that term, they commence the second and final course.

VII. In case of interruption by sickness, pupils may repeat one year's course. None, however, can remain longer than three years at the school.

VIII. A board of instruction directs the studies. They propose useful changes, and regulate the progress of the studies. They are charged with the examinations."

Special inducements are held out to application and proficiency, by means of promotion. A corporal who has diligently improved his opportunities may thenceforth aspire to the highest ranks, a subsequent article of the same decree providing that "corporals who graduate among the first ten of their classes, are placed on the list of sergeants for promotion as sub-lieutenants, as soon as they have completed the two years' service as sergeants required by law;" see pp. 406, 407, Arts. 3 and 11.

After instruction, the next subject requiring special attention is the soldier's training. Instruction and training are closely allied, but should not be confounded. As in social life there is an evident difference between the well bred man and the learned man, so, in the army, a regiment may have received very thorough instruction, and yet be extremely deficient in training. Among the ancients, military training received a very large share of attention during peace. The troops of Philip of Macedon were kept by him in constant motion; their ordinary march was three hundred stadia or about thirty-eight miles a day. It was thus that he became so formidable to Greece, and prepared for Alexander the conquest of Asia. The Spartans exercised themselves so laboriously during peace, that they regarded war as a recreation. In recalling the Romans

of Camillus, of Scipio, and Cæsar, let us follow them through their education and habits; let us examine the hard and toilsome life to which they were inured from early childhood, the marvellous exercises they daily performed, and we shall more clearly understand the remarks of Josephus that "among the Romans, the military exercises were bloodless combats, and the combats bloody exercises." It was this training which ensured the success of their arms, and established their superiority as a race. Their youth found it a resource against indolence and apathy; while it hardened their muscles, it imparted grace, elegance, and agility to their frames; it inspired them with a just confidence in their might, and moulded them to subordination and discipline; it enkindled a military spirit and instinct; it aroused and incited ardent courage; rendered the fatigues of war easy, and, above all, secured to them that first and indispensable quality in a soldier—strong bodily health.

"It may be stated as a fundamental maxim in the science of warfare," says Ordronaux, in his excellent and eminently practical work on "Health in Armies," "that a state of perfect bodily health is indispensable for the successful discharge of a soldier's duties. Whatever influence, whether of soil, climate, diet, or discipline, interrupts this physical condition, disqualifies him to that extent for active usefulness. Armies being aggregations of individuals, each contributing something toward the strength, support, and moral influence of the general mass, it follows that the withdrawal of any units from this sum is pro tanto a diminution of the effectiveness of the whole. And worse than this, the weak and sick, in proportion as their numbers increase, demoralize the healthy, as well by the spectacle of their infirmities as by the increased duties, responsibilities, and apprehensions for the future which must inevitably fall upon them. A sick army is always a demoralized force. Men whose organic functions are either

interrupted or vitiated by disease cannot perform their duties as before. They may still have courage, but courage, in such cases, becomes simply a spasm, and is lacking in all qualities of endurance. The first duty of a skilful commander is, therefore, to preserve the health of his troops; for their health, like their ammunition, is the instrument with which they can alone hope to conquer.

It seems to be hardly known outside of armies that the proportion of their mortality, under the most favorable circumstances, is twice that of civil life, although in this latter so many patent causes of disease manifest themselves as would make us infer differently. Dr. Farr, from observations made on the British army, presents us with the following fearful statistics:

| Relation of Mortality. | | Deaths annually to 1,000 living. |
|---|---|---|
| Ages. | Occupation. | Ratio. |
| 20 to 25 | Civilians, | 8.4 |
| | Soldiers, | 17.0 |
| 25 to 30 | Civilians, | 9.2 |
| | Soldiers, | 18.3 |
| 30 to 35 | Civilians, | 10.2 |
| | Soldiers, | 18.4 |
| 35 to 40 | Civilians, | 11.6 |
| | Soldiers, | 19.2 |

That this mortality is reducible to a ratio at least equal to that of civil life, is not to be questioned; for we see it already so foreshadowed in the less percentage observable among old soldiers, who, without any additional safeguard to health beyond those possessed by their younger brethren, are yet, from habit and induration, protected from those lurking morbific agencies which decimate the latter; and if so reducible, then it is the duty of the state to prevent it, because preventable mortality is criminal mortality, and the responsibility for

its occurrence rests at the door of those through whose negligence it has happened.

It is to a want of observance of simple hygienic rules that we must charge this needless waste of human life; for it is not sufficient to say that the inevitable duties of a soldier—guard-mounting, drills, fatiguing marches, changes of climate, diet, and dwelling—necessitate so high a ratio of mortality. Experience, in fact, proves the contrary. Hunters and trappers are proverbially healthy men, although exposed to as great fatigues, hardships, extremes of weather, and vicissitudes of diet, as soldiers. The cause of this excessive mortality is plainly due to something different from any one of the above assigned reasons, or even all of them combined.

Applied either separately or jointly to any one individual, they do not, as in the case of hunters, justify us in considering them as efficient causes. We must look, therefore, for another and more predisposing agency in the production of disease. And that agency we shall find in the gregarious mode of living, and the general negligence of preventive measures which prevails in most armies. The former is undoubtedly inevitable, but it need not be accompanied by a total disregard of those rules of health which are found indispensable to the well-being of all large communities. Men congregated in masses, and in small areas, overtasked, uncleanly, and improperly fed, whether they be soldiers or artisans, are subjected to precisely the same laws of health and disease, and the violation of those laws always entails the same fearful penalty upon all.

Military science has made stupendous progress within the present generation. In the improvement of arms in particular, it has signally triumphed. So terrible is its enginery now, that the possibility of any defence against its effects is almost abandoned. The art of offence has culminated. Before the destructive missiles hurled from the mouths of rifled cannon, neither

wood nor stone can stand; and the reduction of any fortress against which such ordnance is brought to bear is simply a question of time. But with all the glory which the art of warfare has acquired, and with all the good it may have accomplished in equalizing disparity of forces, it will yet have failed in the first of all essentials, and left an unrelenting foe in its rear, so long as it ignores the necessity of incorporating within its principles a well digested system of hygiene. Without this, the direst enemy will be found always in the very midst of the largest assemblage of men; striking right and left, at night and in the day, the 'lean, cold hand of disease' will dismember any army more certainly than those who, heralded by drum and bugle, and visible to sight, fall on it only with bayonet and sabre-stroke. It was Frederic the Great who used to remark with a sigh, that fever annually robbed him of more men than seven pitched battles. And yet, long as this startling truth has been known, and fearfully as it has illustrated itself in every army since the day when it was first uttered, no adequate measures have yet been taken in many countries to prevent the evil which thus decimates their armies. Overcrowded, ill-ventilated barracks, small, foul tents, indifferent provisions, badly organized hospitals, will continue to do their work of silent destruction, until medical men are allowed some power and discretion in the housing, feeding, and superintendence of troops. When this shall be done, we can hope for a marked diminution in the ratio of their mortality; but until it is done, we must expect to see the flower of every army cut off, and the state shorn of its most useful members in times of direst necessity.

It is upon officers, therefore, of every grade, that rests the responsibility of preserving the health of their men. From the highest to the humblest, each has his portion to command, and inasmuch as any wanton, unjustifiable waste of life, either in an

assault or on a battle field, exposes an officer to a courtmartial, so, with the same propriety, and by parity of reason, should any negligence of sanitary rules, resulting in unnecessary loss of life, expose him to the same penalties. With a sufficient medical staff at his elbow, it is idle for the officer to attempt to shield himself behind the plea of ignorance, or those petrified formalities which are the heirlooms of inflated officialism. In the presence of elementary forces hastening to develop disease, red tape and official rubrics must vanish; hygiene, without waiting for the fecial college to declare war, must be allowed to attack the enemy and to demolish him, ere he has assembled his forces; after which 'general orders' can again march on in their old conventional ways.

A chief source of disturbance to the health of all new levies is found in the suddenness with which they are translated from the comforts of home, and the moderate, generally self-imposed and self-regulated duties of civil life, to the extremes of diet, (quantity and quality,) fatigue, and exposure, incidental to active operations in the field. This suddenness of transition is always depressing to the nervous energies in any contingencies, either of civil or military life, but particularly, and more dangerously so in the latter, because of the necessary inability of obtaining periods of intervening rest, during which nature can gradually recover herself from the direct and reflex shocks under whose influence she is laboring. Placed in this position, the soldier may be considered as directly inviting an attack of disease; nor will it be slow to appear, or fail to assume an epidemic character when corresponding in type to the constitutional tendencies of the season.

Now, the best protection to health is the possession of health, which, like a shield, protects us against morbific influences only so long as we preserve it entire. Other things being equal in any exposure to the sources of disease, a man in vigor-

ous health will longest endure, while those of inferior physical tone soonest succumb. Hence it becomes, in an economical point of view, a matter of the gravest importance to the state to see that its armies are formed out of the most able-bodied of its adult population. The soldier must be healthy at the start, if he would enter the service with any hope of being useful to his country, or to acquire distinction for himself. Statistics show that disease is nearly four times more formidable to armies than bullets, and the weak are very sure to fall first beneath the shafts of this unerring marksman. This being the case, science is called upon to provide means adequate to interrupting all preventable diseases in the soldier when actually in the service, as also to sift out from among recruits all those whose physical constitution is permanently defective. We must have healthy, well-knit men for recruits, in order to make strong and resolute soldiers, and we must have strong and resolute soldiers in order to form invincible armies."

Troops in feeble health may be brave, but their valor cannot accomplish much against an enemy equally brave, and vigorous besides. Moreover, bravery, courage, and intrepidity, as manifested in war, are not innate qualities, as is too often supposed; they may exist in germ, but they must be cultivated, as every other faculty. A man may tremble from natural emotion at the sight of danger, and yet be capable of performing the greatest deed of heroism. Courage springing from instinct or passion may be seen in the brute, and, like blind fury, is unreliable; but the courage which acts calmly, and makes men confront danger with firmness and resolution, is the result of education, and is founded on reason and principle. "Courage," says Addison, "that grows from constitution, often forsakes a man when he has occasion for it; courage which arises from a sense of duty, acts in a uniform manner." Nature, we know, has implanted deeply in the heart of all beings the

instinct of self-preservation, the fear of pain, and the horror of death. Bravery, therefore, to be constant, must be the result of deliberate reason, which teaches us to imperil our lives for a good cause, and to fulfil this duty as the most glorious service we can render to a country and a society that have done all for us. Only when thus sustained is courage true, steady, and unappalled; for, of all the sacrifices which nature prompts us to recoil from with the greatest horror, the most terrible is that of life.

"Bravery in armies," says Marshal Marmont, "may thus be classified: first, that which keeps a man from dishonoring himself, and moves him to do his duty faithfully; this is not rare: secondly, that which impels him to exceed his duty; this is much less common: lastly, that which determines him to make his life subordinate to the triumph of his cause; this is the rarest of all, and wherever it is displayed, honors, riches, and consideration should be its recompense; such opportunities of conferring rewards, morever, so seldom occur, that the expense will never fall heavily on any state.

But personal bravery is not the only sentiment that animates the soldier's heart. In order to derive from troops their full combined worth, mutual confidence must exist in all those who compose an army. The soldier must trust in the courage of his comrade. He must feel convinced that his officer, brave as himself, is his superior in experience and instruction; he must heartily accredit to his general equal valor, and greater science and talents. Such an army, like a bundle of rods, nothing can break while united; it is the first condition of the strength of armies, the first element of success.

But this fundamental basis, which we call confidence, is possible only among tried and veteran soldiers; not among new levies, which do not know each other. Hence the absurdity of a system of militia, designed to take the place of regular

troops. Militia, granting that it is composed of everything that is bravest on earth, will never be of any worth at the beginning; for as the valor and capacity of each cannot be appreciated by the others until actually tried, the first attempts will be made without the aid of mutual confidence, and will probably lead to great and irreparable misfortunes."

To assemble men in larger or smaller numbers, and place weapons in their hands, is by no means to form an army. They must likewise submit to a chief, who guides all their movements, and directs all their efforts to one great central purpose. If otherwise, instead of constituting an army, they are nothing but an armed mob; and the hosts that compose it, not obeying a single will, nor acting all in the same direction, can only give to this mass various and diverse impulses, which, counteracting each other continually, would contribute to its ruin, rather than to its glory and its safety. The good organization of an army, whose mobility, as already shown, depends upon its proper distribution into divisions and subdivisions, thus requires corresponding degrees of authority, and the prompt and constant obedience of all subordinates to their superiors—in a word, a strict and steady discipline.

Discipline in an army is of the first importance; it is the vital principle, the motive power of any organization. Without it, an army cannot exist. With it, on the other hand, we sometimes see bands of mercenaries, gathered from the very dregs of the people, become good troops, and accomplish great things. Such were the Greeks of Cyrus, the hired soldiers of Hannibal, and, in modern times, the English of Wellington. But discipline is essential, not only to the existence of armies; upon it depends also the life of the state. A nation may perish if its armies want discipline, as did Rome and Byzantium, in the time of the Lower Empire; whereas, while it is vigorously maintained, nothing is hopeless, even after the severest

reverses; as Rome demonstrated in the days of Brennus and of Hannibal.

Discipline, like everything else connected with army matters, is dissimilar in different nations, because it is necessarily modified by the spirit of the age, the character of the people, their political constitution, form of government, and military system. In free and enlightened states, we must not require the rigors of a barbarous discipline, of which ancient and modern history gives us, unfortunately, too many examples. Manlius Torquatus and Posthumius the dictator, without regarding the victories of their sons, condemned them to death for having fought without orders. We remember, too, the bloody and brutal act of Bajazet I, who disembowelled a soldier whom a poor woman accused of eating the food she had procured for her little children. Peter I, in imitation of the ancients, sacrificed a young officer for giving unauthorized combat to the Swedes, although he had vanquished them. Frederic II inflicted death upon the unfortunate Zietten, who, contrary to orders, had kept his light burning in his tent while he finished a letter to his young wife; "Add," said the king, "that, for the good of discipline, to-morrow, at the same hour, you will have ceased to live." Such instances of inhuman severity shock the sensibility of modern civilization; still we cannot help admiring the good effect of rigid discipline in the conduct of the Roman army commanded by the consul Marcus Scaurus, whose camp enclosed a tree laden with ripe and tempting fruit, which the owner found entirely untouched when the forces had left his grounds.

Under a free government, and in a national army, where the soldier enjoys equal rights and privileges with all other citizens, degrading treatment is, of course, at variance with the condition of society; and praise, distinction, and reward should form at least as large a part in the system of discipline, as

blame, disgrace, and punishment. Under despotic governments, however, where the sensibilities are apt to be blunted by arbitrary laws, a severer system may be required. Such is that of the Russian army, for instance, which inflicts the lash upon the soldiers, and exile and disgrace upon the officers. Such is also that of the Austrian army, where it is necessary to restrain the Croats, Dalmatians, and other rude tribes. Such, unfortunately, continues to be the discipline of England, whose mercenary system of recruiting has made the soldier a lower caste than his officer and the rest of the community. According to the "London Times," in 1857, 112 soldiers received 5,240 lashes; the "Daily News" informs us that in 1856, 44,492 were administered in the navy alone; and the question of flogging having arisen in the House of Commons, in March, 1861, the practice was sustained by a vote of 144 against 39. Barbarous as this usage is, it avails little in restraining men who feel that they are systematically degraded and kept low. The correspondence of Wellington, 1809 and 1810, makes us shudder at the excesses perpetrated by his army, and of which he bitterly complains. "A cry of horror," says Botta in his "History of the American Revolution," "arose throughout the civilized world against the ferocity of the British armies. The royal troops were not satisfied with pillaging; they spared neither women, children, nor sick. Herein they had the negroes for spies and companions; such was the rapacity of the robbers, that, not content with stripping houses of their richest furniture, they violated the sanctuary of the dead; grasping for gold, they went rummaging among the tombs. Whatever they could not carry off, they destroyed. Everywhere ruins and ashes, gardens ravaged, magnificent habitations devoted to the flames; the very cattle found no quarter with the barbarians," &c.

Discipline, though adapted to the character of the people, should never be harsh; it should be severe only upon serious

offences, punishing always according to law, but mild and paternal toward minor faults, such as may arise from accident or heedlessness, not from malice or ill-will. Calm, impartial, prompt, firm, never debasing, it should aim at preventing rather than at punishing disorder. In this, good example exerts the greatest influence, and the officer who himself sets such an example will surely be obeyed. It is the habit of discipline, and not its occasional observance, which imparts to an army that military spirit, under whose inspiration alone can be achieved the mighty deeds which were performed by the Macedonians of Alexander, the legions of Cæsar, the Swedes of Gustavus Adolphus, and the great army of Napoleon. "An army animated by military spirit," says General Clausewitz, "is never shaken by imaginative fears; never forgets obedience, neither in success nor amid disasters of defeat. It confides in its chiefs; it knows that the fatigues it undergoes are the means of victory; its physical powers, like the muscles of the athlete, are hardened by the habit of toil and privation. In short, it is upheld in its duties by the spirit which animates it, and which it owes to its discipline."

Some men possess the natural gift of commanding others, and of winning from them a willing obedience. Their authority is at once acknowledged, and their mere presence often suffices to infuse into the troops a spirit of order and subordination, which renders them equal to the greatest undertakings. Such a man was Napoleon. In 1796 the army of Italy was in a state of extreme destitution; young General Bonaparte soon after assuming the command ordered a forward movement. A sedition broke out; the soldiers refused to march until they received their pay. The commander-in-chief promptly ordered the arrest of the officers of the revolted regiments, which tumultuously clamored for their liberation. Bonaparte, who seems to have anticipated their demand, subdued them by this

admirable appeal: "Soldiers, I hear your prayers; they please me; they are worthy of you! It is no longer a defensive war; it is a war of invasion, of conquest, we are to make. You are without artillery, without clothing, without shoes, without pay; you lack all these things, but you are rich in courage! Beyond these mountains extend the fertile plains of Piedmont and Lombardy; there are stores, artillery, treasures. Onward, then, and soon they will be ours. The enemy is four times more numerous than ourselves; your glory will be the greater. I return to you your officers; they will lead you to the enemy!" At these words, enthusiasm succeeded to disorder; the cries of "Vive Bonaparte! Vive notre général en chef!" were heard on every side; and it may be affirmed that from that moment dated the devoted obedience of the army of Italy to its young chief.

Another example will serve to show that it is not by rigorous treatment only that soldiers are rendered docile and submissive to discipline. During the night which followed the long and bloody contest of Arcole, Bonaparte, dressed simply as a subordinate officer, made the round of his camp, and found one of the sentinels lying in deep sleep, with his head reclining on the but of his musket. Without awakening him, he gently withdrew the musket from under his head, and stood sentry in his place. It was only at the noise of the approaching relief that the soldier awoke and sprang to his feet. But what was his amazement to behold a young officer doing duty for him. Confused, he knew not what to say, but his embarrassment soon changed to terror when, on attentively looking, he recognized in the officer the general-in-chief. "Bonaparte!" exclaimed he, "I am lost." "No," said the general, kindly; "compose yourself; after so much fatigue, a brave man like you may well be excused for falling asleep, but henceforth endeavor to select a better time." The fact having become

known throughout the army, probably accomplished more for discipline than the cruel and inhuman act of Epaminondas, who, under similar circumstances, slew a sentry, and afterward coolly observed that he left him as he had found him. Such instances of brutal severity have often sullied the pages of military history; in some cases they may have been justified by necessity; but generally, better results are obtained by a strict but paternal discipline, founded on honor,and noble sentiments.

Honor is the firmest foundation for discipline, especially among national troops. Excessive punishments irritate the soldier without amending him; they should be reserved solely for those rare cases when, to arrest bold disorder, we must employ the most powerful means of suppression. It is only by persuasion and kindly treatment, even while applying punishment, that we may hope to reclaim the erring soldier to a sense of duty. It is only by scrupulously avoiding all offensive and unfeeling reproaches that debase men, and by striving to enkindle sentiments of patriotism and honor, that we can succeed in forming troops magnaminous in victory and unshaken under reverses. These are the only powers on which we can rely in critical moments; and if they do not suffice to form heroes, if enthusiasm alone can bring forth and renew the prodigies of Thermopylæ, at least we may be sure of obtaining by means of them all that it is possible to expect from troops well organized and inured to war.

A chief should, therefore, never indulge in harsh or scornful language; he should carefully check every feeling of displeasure toward an inferior who is wanting in respect to him; he must never give way to passion, and he will always have occasion to congratulate himself on his moderation; for the soldiers, who are not likely to mistake the nature of the offence, will appreciate his forbearance, discountenance the offender, and be more heartily disposed to obedience.

There is, however, another extreme into which militia o volunteer officers too often allow themselves to be betrayed, an which should be equally shunned; it is that indiscriminat familiarity which lowers and discredits all who indulge in it and renders them contemptible in the eyes of those very person who seek to ingratiate themselves into their favor. It is thi unsoldierly weakness which too easily heeds the complaints o those bad men who are ever ready to dodge, to find fault, and t proclaim their grievances—a weakness destructive of all disci pline, as it closes the eye to faults and disorders that justl require notice and punishment. A too familiar chief loses hi influence over his soldiers; he moreover is exposed to the rude ness and want of respect of those whom he has accustomed t regard him as a mere companion, and to address him as such.

The officer who is entrusted with the conduct of a troo must, therefore, endeavor to maintain a safe medium betwee both dangers, aloof from the harshness which revolts, and th familiarity which produces contempt; and this he can effect, i he know how to couple justice with severity, and kindnes with the dictates of duty. Where no fault passes unnoticed where good conduct and gallant actions receive due praise an are properly rewarded, a chief will be at once feared and love by all his subordinates; his orders will be faithfully executed and discipline will reign in all its rightful vigor.

This distinction between a proper intimacy and a lo familiarity is thus clearly traced by De Tocqueville in hi "Democracy in America:" "It is a very general opinion especially in aristocratic countries, that the great social equalit which prevails in democracies ultimately renders the privat soldier independent of the officer, and thus destroys the bon of discipline. This is a mistake, for there are two kinds of dis cipline, which should not be confounded. When the officer i noble and the soldier a serf, one rich and the other poor, th

former educated, the latter ignorant and weak, the strictest bond of obedience may be easily established between the two men. The soldier is broken into military discipline, as it were, before he enters the army; or, rather, military discipline is nothing but an enhancement of social servitude. In aristocratic armies the soldier will soon become insensible to everything but the orders of his superior officers; he acts without reflection, triumphs without enthusiasm, and dies without complaint; in this state, he is no longer a man, but he is still a most formidable animal trained for war.

A democratic people must despair of ever obtaining from soldiers that blind, minute submission and invariable obedience which an aristocratic people may impose on them without difficulty. The state of society does not prepare them for it, and the nation might be in danger of losing its natural advantages if it sought artificially to require advantages of this particular kind. Among democratic communities military discipline ought not to attempt to annihilate the free spring of the faculties; all that can be done by discipline is to direct it; the obedience thus inculcated is less exact, but it is more eager and intelligent. It has its roots in the will of him who obeys; it rests not only on his instinct, but on his reason; and consequently it will often spontaneously become more strict, as danger requires it. The discipline of an aristocratic army is apt to be relaxed in war because it is founded upon habits, and war disturbs those habits. The discipline of a democratic army, on the contrary, is strengthened in sight of the enemy, because every soldier then clearly perceives that silent acquiescence and obedience are the very conditions of success.

The nations which have performed the greatest warlike achievements knew no other discipline than this. Among the ancients, none were admitted into the armies but freemen and citizens, who differed but little from one another, and were

accustomed to treat each other as equals. In this respect it may be said that the armies of antiquity were democratic, although they came out of the bosom of aristocracy; the consequence was that in their armies a sort of paternal familiarity prevailed between the officers and the men. Plutarch's lives of great commanders furnish convincing instances of this fact; the soldiers were in the constant habit of freely addressing their general, and the general listened to and answered whatever the soldiers had to say; they were kept in order by kindly language and by example far more than by constraint or punishment. The general was as much their companion as their chief."

"The greatest talent of a general," says Plutarch, "is to secure obedience through the affection he inspires." This was the spring of Napoleon's influence; it was thus that he established a discipline which rendered his soldiers equal to any undertaking, and ready for every sacrifice. It has ever since remained a military maxim in the French army, and its principles are thus admirably developed by Marshal Marmont, in his "Esprit des institutions militaires": "Discipline, that is, submission to rules and to the will of the lawful chief, must be unremittingly maintained; and each one, whatever be his grade, should ever bear in mind that he commands his subordinate only by virtue of the obedience which he owes to his superiors. Discipline, always severe for a grave transgression, should, nevertheless, be measured in its applications. In countries where elevation of sentiment, delicacy of manners, and dignity of character have excluded corporal punishments, it is important, as far as possible, to associate opinion with correction.

The French army, especially, has always afforded to an intelligent chief frequent occasions of employing this resource. The just administration of praise and blame, the talent to create a lively and noble emulation, have often sufficed for all needs.

Rewards and penalties based upon opinion have the marvellous advantage of being susceptible of infinite shades, and of acting powerfully upon generous hearts. Never should any punishment be inflicted with an expression of contempt, except for an act of flagrant cowardice. Whatever degrades the soldier and stigmatizes him, diminishes his valor, as everything which exalts him in his own eyes augments his powers. There are a thousand modes of varying the expression of these testimonials; a skilful chief selects with discernment those which best suit the men he has to deal with, and the circumstances in which he may be placed.

In some armies excessive severity is applied to delinquencies which to the eye of reason seem trifling. Without venturing to express blame, I certainly cannot commend a system which treats them as very important offences. Relating to some minutiæ of dress or momentary restlessness under arms, a severe punishment is not reasonable; a moderate one, however, administered with a view to the proper bearing of the soldier, is right and useful. A spirit of order and a respect for regulations should be manifest in all his actions; and as a means of education and of confirming good habits of conduct, a strict observance of routine should be required. A soldier in a soiled coat will doubtless fight as well as another whose appointments are perfectly correct; but, being less exact in the performance of his daily duties, he is likely to be less obedient to the voice of his commander. The life of an army is so wonderful, so artificial, that it would be dangerous to slight anything which contributes to habits of order and submission. But a chief must distinguish the true aim without exaggerating the importance of the means.

It is of great moment that the officers and commanders use special care to inspire their men with confidence; without this close bond, they can count on nothing. When at rest, in a

state of peace, regular power is easily respected and obeyed; but in the perturbations caused by danger, everything becomes confused, and the least natural obstacle may prove insurmountable. It is then that self-reliance and confidence in others, those mighty moral agents, contribute an extraordinary energy, that compels success. The chief should therefore sedulously provide for the well being of the soldier; he should know how, on trying occasions, to share his sufferings and privations; watch over the maintenance of order and discipline; punish when necessary; and eagerly seize the opportunity of conferring rewards, but only merited rewards; for confidence in the justice of a chief is the mainspring of his influence, and of the sentiment with which he is regarded. The soldier's instinct is quick to discover whether his chief is entitled to it. Strictness in him neither depresses nor wounds, for it supposes authority; and authority, when it is an impartial interpreter of the laws, insures an adequate protection of every man's rights. Even those who are subject to its action feel, in the very depths of their hearts, both its utility and its respectability."

Discipline, then, to be efficient, must be founded on honor, and be animated by the fear of punishment and the hope of reward. The ancients, who thoroughly appreciated their importance, were very systematic in applying both. Among the Greeks, the rewards were promotions, garlands, or outward tokens of distinction, and also funeral honors and encomiums decreed to the brave warrior who had fallen in battle; public provision was made for the widows and children of the slain, and for those who were injured by wounds. Deserters were always punished with death. Those who refused to serve, who quitted their ranks, and such as threw away their shields, were subject to civil degradation. At Athens, they were not permitted to enter the temple or public assemblies. In Sparta they were exposed to yet deeper

disgrace, which extended even to their whole family; so terrible was it, that mothers often stabbed their sons when first they met them after their return.

At Rome, the punishments for misdemeanors and crimes were very severe, both in garrison and in camp. Theft, perjury, carelessness on watch, leaving a post, or cowardly flight, received the punishment called fustuarium, in which, at a signal from a tribune, the whole legion fell upon the offender with sticks, usually beating him to death; if he escaped, his indelible disgrace was almost worse than death. When a whole maniple had fled, this punishment was inflicted on every tenth man, taken by lot, and the rest were driven from the camp. Insurrections, desertions, and wilful disobedience were always punished capitally. But if the penalties were severe, often barbarous and cruel, the rewards that awaited the deserving were numerous and well arranged. Among the latter, golden crowns were most frequent, as the corona castrensis, or vallaris, conferred on him who first entered the enemy's intrenchments; the corona muralis, on the brave who first scaled the enemy's walls; and the corona navalis, on him who first boarded an enemy's vessel. There were also wreaths or crowns of twined leaves and blossoms, as the corona civica, of oakleaves, the reward of saving a citizen from death or captivity; the corona obsidionalis, for delivering a besieged city; and the corona triumphalis, of laurel, worn by a triumphant general. There were also smaller testimonials of various kinds, as a spear without any iron on it, a lance with a streamer of different colors, ornaments for men and horses, golden chains, bracelets, clasps, buckles, &c. Another form of reward was limited or unlimited leave of absence, and finally bounties or donations in land and money.

Similar tokens of merit are awarded in our modern armies, in the form of military decorations, medals, swords of honor, &c.;

but none of these can be regarded as conveying any real distinction, unless they have been conferred by the proper lawful authorities. Donations of land and pensions were granted in France to Marshal Pelissier, after the Crimean war; in England to Wellington, after the battle of Waterloo; and in this country to Lafayette, after the Revolutionary war. In most countries, the law provides half pay or pensions, after a stated term of service, or after disability caused by injuries in battle. This is a heavy charge upon the treasury; but as it is the only honorable mode of disposing of those who have grown old or suffered in the service of their country, and as, moreover, it brings the army under the command of the young and the vigorous, there is probably no better method of promoting the true interests of a nation. In Prussia and Russia this expense is greatly diminished by giving a large portion of the civil offices to pensioners. In England, the purchase system dispenses with a retiring list. Titles of nobility, where they exist, have generally originated in military rewards. After the manner of the first empire, we have lately witnessed in France the creation of the Duke of Malakoff, the Duke of Magenta, and the Count of Palikao; England created new lords after the war in India; and Russia granted titles to the conquerors of Warsaw, Turkey, and the Caucasus.

Rewards, like punishments, vary with states and epochs, and like them, must never be arbitrary, but be founded on principle and system, and regulated by legislative enactment. The expediency of such rewards as those above described may be regarded from different points of view, according to the different systems of government; but there can be but one opinion respecting the advantage of a regular system for conferring the reward par excellence—promotion. Promotion, which ministers to one of the most importunate passions of our nature, ambition, and likewise gratifies the desire of every man to improve

his position and secure a future, should be considered both a reward and a right: a reward, when granted to merit; a right, when conceded to seniority. The meanest soldier should feel that the upper ranks of the service are open to him, and this feeling will operate as an incentive not only to gallant actions, but also to the attainment of that knowledge which should distinguish the position to which he aspires. Merit, combined with seniority, appears to be the most rational ground of advancement. Neither officer nor soldier should be promoted solely because he happens to have been so many years in a junior rank, for those years may have only exposed his incapacity; only if two men of equal merit present themselves for promotion, seniority should turn the scale. "Old soldiers," says Marshal Saxe, "must not be rendered wretched and unhappy by unwarrantable promotions, nor must extraordinary talents be kept back to the detriment of the service on account of mere rules and regulations. Great abilities will justify exceptions; but ignorance and inactivity are not made up for by years spent in the profession." In the army of Gustavus Adolphus, seniority and merit were the only avenues to advancement; the former, however, was always closed upon an undeserving applicant, but the latter never failed to lead to reward. Birth, rank, and patronage, all were unavailing.

Such are the general principles which should regulate a proper system of promotion; its details necessarily depend on circumstances, such as the mode of recruiting, the nature of the government, the culture of the people, and the political constitution of the country. In France, many officers rise from the ranks; in England and Russia, scarcely one, because the modes of recruiting are different. In almost all armies, advancement below the rank of commissioned officers is awarded by the colonel. Second lieutenants generally graduate from military schools, or are taken from among the non-commissioned officers,

capable of fulfilling certain conditions. All other promotions proceed according to the following methods. First, according to seniority, in order to respect acquired rights and reward ancient services; secondly, according to choice, in order to excite emulation and invigorate the troops by promptly raising the most efficient officers to the highest positions. In some armies this choice is subordinate to a public examination, to which all are admitted, in order to prevent undue influences, encourage a taste for knowledge, and reward true merit. Thirdly, in some aristocratic countries, promotion depends on rank and birth; and fourthly, on wealth also, as in England, where money can purchase the various grades as high as that of lieutenant-colonel. These ranks thus become the private property of the officers, who at pleasure may sell them to others; the right of purchase being limited only by a short term of service in a rank immediately below. As the third and fourth modes are utterly incompatible with our political institutions, we will confine our remarks to the first and second, taking as a basis the following extract of the law which, for the last thirty years, has regulated advancement in the French army, the most democratic military organization in the world, and for this reason more particularly entitled to our attention.

"I. No one can be corporal until he has served at least six months as a private soldier in some one of the corps of the army.

II. No one can be sergeant until he has served at least six months as corporal. During a campaign, all vacancies of corporal or sergeant, in any battalion or squadron, belong exclusively to those present in the field where the vacancies occur.

III. No one can be sub-lieutenant, unless he is fully eighteen years of age, and has either served at least two years as a non-commissioned officer in one of the corps of the army, or has

been two years a pupil of a military school, and has passed a satisfactory examination before leaving the school. The first vacancy occurring during a campaign is given to some sergeant present; the second and third to those eligible, according to a fixed rule adopted at the beginning of the year. But when a non-commissioned officer has merited, for distinguished conduct mentioned in the orders of the army, a nomination for the grade of sub-lieutenant, and no vacancy exists in his regiment for the promotion of a non-commissioned officer, he is named for promotion either in his own corps or in other regiments of his own arm, to a vacancy belonging to the second and third class.

IV. All soldiers of the army under twenty-five years of age, are allowed an examination for the polytechnic school.

V. No one can be lieutenant unless he has served two years as sub-lieutenant.

VI. No one can be captain, unless he has served two years in the grade of lieutenant.

VII. No one can be chef-de-bataillon, chef-d'escadron, or major, unless he has served four years as captain.

VIII. No one can be lieutenant-colonel unless he has served three years in the grades of chef-de-bataillon, chef-d'escadron, or major.

IX. No one can be colonel unless he has served two years in the grade of lieutenant-colonel.

X. No one can be promoted to a grade superior to that of colonel, until he has served three years in the grade immediately inferior.

XI. One third of the vacancies in the grade of sub-lieutenant of the different corps of the army shall be given to the non-commissioned officers of the respective corps in which the vacancies occur. See Art. 3.

XII. Two thirds of the grades of lieutenant and captain

shall be given by seniority, viz., in the infantry and cavalry, to the officers of the respective regiments; in the staff corps, to the officers of the corps; in the artillery and engineers, to the officers who stand in competition. Promotion to the grades of lieutenant and captain are made as follows: half of the vacancies in the battalion, squadron, or detachments which form an active army, and two thirds of those occurring elsewhere, are given to sub-lieutenants by seniority in their respective corps. All officers, whether with that portion of their corps in campaign or not, may be selected to fill vacancies in their corps belonging to the class of selections. But when on account of distinguished conduct, duly mentioned in army orders, a sub-lieutenant or lieutenant merits promotion to the next superior grade, and there is no vacancy in the class of selections in his own regiment, he may be promoted to a vacancy in some other regiment of his arm. When so many vacancies in the grades of lieutenant and captain of a regiment occur in war, that there is not a sufficient number of the inferior grade with the specified qualifications to fill them, they will be filled from other regiments of the same arm.

XIII. Half of the grade of chef-de-bataillon and chef-d'escadron will be given by seniority of grade as follows: in the infantry and cavalry and staff corps, to the captains of each arm; in the artillery and engineers to the captains who stand in competition. The employment of major—a regimental administrative officer—will be given by selection from those eligible.

XIV. All the grades superior to those of chef-de-bataillon, chef-d'escadron, or major, will be given by selection from those eligible.

XV. Seniority of grade will be determined by date of commission, or in cases of similar date, by the date of the commission of the inferior grade.

XVI. When an officer is no longer on the roll of any of the active corps of the army, the time thus passed out of service shall be deducted from his seniority, except in cases of mission, disbandment, or suppression of employment. The time spent in foreign service shall also be deducted from his seniority; but not that employed upon detached service in the national guard, in the navy, or upon a diplomatic mission. Officers who cease to be borne on the roll of the army corps, in consequence of suppression of employment or disbandment of regiments, will nevertheless be entitled to promotion in the regiments which may be retained or subsequently created in the same arm to which they belong.

XVII. Officers, prisoners of war, will retain their right of seniority for promotion; but they can be promoted only to the grade immediately superior to that which they had when made prisoners.

XVIII. The term of service required for promotion from one grade to another, may be reduced one half by service in war or in colonies.

XIX. The conditions required by the preceding articles for passing from one grade to another may be relaxed only in the following cases: first, for distinguished conduct duly set forth and published in the general army orders of the day; and secondly, when it is not otherwise possible to fill the vacancies of corps in the presence of the enemy.

XX. In time of war, and in corps in presence of the enemy, half the grades of lieutenant and captain shall be given by seniority. All the grades of chef-de-bataillon, and chef-d'escadron shall be determined by selection from those eligible.

XXI. In no case shall any one be appointed to a grade without command, nor be granted an honorary grade, nor shall a rank be given superior to that of actual command.

XXII. All promotions of officers shall be immediately

made public, with notification of the vacancy filled, and of the reason of promotion, whether for seniority, selection, or distinguished action.

XXIII. No officer, admitted to the retired list, can resume his position upon the active list.

XXIV. Command is distinct from grade. No officer can be deprived of his grade, except in the cases, and under the forms, determined by law.

Selections are made as follows: recommendations for appointment of non-commissioned officers are to be made to the colonel of the regiment by captains, accompanied with the remarks of the chefs-de-bataillon, chefs-d'escadron, and lieutenant-colonel. The colonel appoints from this list those who are to fill vacancies. Apart from those on this list, he may also select from those distinguished for some brilliant action. For promotion to the grades of sub-lieutenant, lieutenant, and captain, the chief of the corps recommends, after conferring with the chefs-de-bataillon and chefs-d'escadron, and also with the lieutenant-colonel when he is present. For promotion to the grade of chef-de-bataillon or chef-d'escadron, the general of brigade recommends, after conferring with the chiefs of corps of his brigade. For promotion to the grade of lieutenant-colonel, the general of division recommends, after conferring with the chiefs of corps and the generals of brigade. For promotion to the grades of colonel or general of brigade, the general-in-chief recommends, after conferring with the generals of brigade and division for the promotion of a colonel, and with the generals of division for the promotion of a general of brigade. These recommendations for the different grades of officers are addressed through the regular channels of communication, and transmitted with each opinion to the minister of war. The chiefs of corps and the general officers to whom this right of nomination is given, designate for each vacancy the

candidate taken from among the non-commissioned or commissioned officers under their orders, who have been presented for promotion in the form presribed. For the grade of lieutenant-colonel, colonel, and general of brigade, the number of candidates may be reduced."

This is certainly the most satisfactory arrangement for men of heart and honor. There are no intrigues, no political influences, no time lost in the degrading task of stooping to court favor; all energies are bent on the performance of duty, and reward must follow desert. Every one relies upon himself, knows his rights, receives proudly his due, and cheerfully recognizes the preference which is founded on merit publicly acknowledged in others. He knows, moreover, that the laws are framed by his peers, and in the interest of the army; and herein, especially, lies the secret of his satisfaction. "The government," says General Hamilton, "which desires to have a satisfied and useful army, must consult them. They cannot be moulded at its pleasure; it is in vain to aim at it." Nations which have their vital interests at heart should bear these views in mind, and frame their laws accordingly.

Satisfactory as is the French law on promotion, many distinguished officers have expressed a wish that ability should be more commonly tested by examinations; and as these are already required of cadets and non-commissioned officers for the rank of sub-lieutenant, and of captains who compete for the rank of major, or to enter the military administration or the gendarmerie, they maintain that advantages would result from their more general introduction, if not as an indispensable condition of advancement by seniority, at least as one of chief consideration in promotions for merit. Nor is their view at all a novel one. Even three hundred years ago, Marshal Montluc pointed out its benefits to Charles IX, and advised that monarch to order all lieutenants, captains, colonels, and even generals,

candidates for promotion, to be examined by a board of old and experienced warriors. "How is this, sire," he says, "that in order to determine lawsuits, you subject to examination all who hold the office of a judge; and there, where it concerns your life and that of your country, you assign military charges to any one who asks for them, without further consideration? In battle you may give such an one a post to defend, and the poor man not knowing his advantage, will yield it, either for want of heart or of experience, and encourage the enemy to complete his victory, and cause your own people to lose it. For four cowards taking flight, suffice to carry the others with them, even the chiefs, and to make all go in disorder. Therefore, sire, upon application for an office, on which so much misfortune may depend, never dispose of it, unless the recipient be previously subjected to examination."

Indeed, by examination alone can we truly measure real talent and capacity; and its general introduction would awaken in the ranks of an army that healthful and laudable emulation which always languishes in times of peace. In 1789, General De Cessac, in his address to the military committee, thus expresses himself on the subject: "Convinced that the excellence of a military constitution, and consequently the glory and safety of the state, depend mainly upon the good selection of the officers, and their instruction, I have patiently reflected upon the principles which ought to regulate their advancement. . . . . The main consideration which has prompted me to propose examinations for both infantry and cavalry is, that I cannot discover any better means of preventing favoritism in the selection of officers, of securing well instructed leaders for the troops, or of closing all access to these important employments against men who possess no other title to them than their personal ambition."

War is a difficult science, which cannot be mastered by

experience alone; its principles and rules require careful study and reflection. Lessons picked up at random are generally uncertain or erroneous, often costly to him who receives them, and almost always fatal to the state. "Whatever argument," says Washington, "may be drawn from particular examples, superficially viewed, a thorough examination of the subject will evince that the art of war is both comprehensive and complicated; that it demands much previous study; and that the possession of it in its most improved and perfect state is always of great moment to a nation." Napoleon I admitted, after fourteen campaigns and unparalleled successes, that experience in war, familiarity with the combat, and the best developed warlike virtues, were insufficient to form good officers; and regretted that most of his generals had not had opportunities to acquire the theoretical knowledge they were so much in need of. Frederic II thought in like manner, and in a characteristic letter, which he wrote to General Fouquet, he remarked, "Of what use is experience, if it is not guided by reflection? It is thought alone, or rather the faculty of combining ideas, that distinguishes man from the brute. If a mule could have made ten campaigns under Prince Eugene, it would not for that reason have become a better tactician."

It is by study alone that a captain can understand what he will need when he shall have become a general; and to postpone learning until after an appointment would be truly absurd, for in all professions a knowledge of the subject should precede its practice. Before conferring the degree of Doctor of Medicine or Divinity, the sole consideration is, does the candidate possess the requisite attainments? not has he been sick, or is he in the habit of attending church? Why, then, where the safety of the state is concerned, shall not the same inquiry be made respecting all to whom it is intrusted, and not what is the number of years they have served the country in peace as well

as in war? Good conduct and long and faithful service are merits justly esteemed in any one, though they may also be found in a donkey. "Vieux soldat, vieille bête," says the French proverb, and generally it is but too true. Ignorance, moreover, inclines men to indocility; it often renders them undecided, sometimes timid in combat, and always bitter and severe in criticising their superiors.

Distinguished actions deserve honorable rewards; but services of this kind, performed by the bravest of soldiers, the most intrepid of officers, cannot always be remunerated by promotion; for a man may be brave as a lion, and yet unfitted for command. In such cases, pensions, decorations, &c., are the most suitable acknowledgments. Wounds also merit distinctions and pecuniary rewards as compensation, but they cannot directly entitle to advancement. When they cause no physical disability, they constitute only an additional claim to consideration, just as bravery does, or as skill in horsemanship, and above all, a high tone and unstained character—invaluable qualities in one called to command, and which ought to weigh very heavily in the scale of final decision, when found in officers of a more elevated rank. In brief, the great object to be accomplished by the laws that regulate promotion, is the reward of genuine worth, in the interest both of the state and of the individual, by distinguishing virtue from hypocrisy, valor from temerity, true talent from self-conceit, and real knowledge from arrogance and presumption.

The routine of the service in times of peace is apt to engender injurious habits among officers, unless they are constantly stimulated to self-improvement. Where this is not done, occasionally some may be found who are persuaded that if they walk with perfect erectness, are neat on parade, and command their platoon pretty cleverly on manœuvre, they are all that can be desired. They are exact in duty, punctilious in honor, courteous

and well bred; but in respect to study, they think they have had enough of that while at the military school, and that the most profitable use they can make of the time not required by service, is to devote it to the club house, the theatre, and places of fashionable resort. This conviction they emphatically derive from the exorbitant rights conferred by seniority. By virtue of this law, so destructive of all noble aspirations, mediocrity advances at the same rate with the most sterling merit, and the "Army Register" becomes the officers' most important work for consultation. But let them take heed. Even when seniority is not controlled by examination, war will correct the abuse, and the first sound of the trumpet will rudely blast all their calculations made in time of peace.

But book learning alone is not sufficient to form a good officer; nor is it enough for him to be personally brave, and to handle his troops skilfully on the field of battle; he must, moreover, know how to bring to the conflict the greatest possible number of men and horses, and in the best condition to act with effect. This may not constitute the most brilliant portion of his knowledge; nevertheless, it is indispensable, and very difficult of attainment, for it is not learned in quarters, and demands a host of conditions. The habit of judging of the health of men and horses; a knowledge of quick remedies applicable in particular cases; the daily and minute inspection of equipments; an acquaintance with the necessary and judicious modes of repairing the same; providing whatever may be useful to the soldier and his horse without overburdening the latter; securing the proper arrangement of everything on the saddle; regularity of pace on the line of march, and favorable sites for the bivouac, with constant attention to whatever can contribute to the good condition of the horses; ability to dispense for a time with the farrier; a notion of the method of using the utensils contained in the soldier's case; understanding the

occasions favorable to refreshment and repose; a moral acquaintance with the men under his command; the preservation of discipline when the soldiers have no longer before their eyes the dread of guard room or jail; that foresight which is ever watchful to prevent useless discomfort to the horses; personal example upon every occasion, and afforded the more readily in proportion as these occasions may be trying or difficult; unbounded confidence, unrelaxing self-sacrifice, the power of enkindling enthusiasm among his followers—these are qualities and accomplishments which theories of peace cannot contribute; these, added to science, courage, a military coup d'œil, and a rapid judgment on the field of battle, form the officer of real distinction.

Let him, then, who would perfect himself, instead of devoting his leisure to frivolous pleasures, seek the society of men from whom he may gather instruction; let him frequent the hospitals and infirmaries when the physician and veterinary surgeon make their daily visits; let him converse with officers of distinction and with soldiers who have seen war and bear a good reputation; let him go to the military workshops, and, without false shame, set the hand to work; instruction thus acquired will be of the utmost service to him in the field; it will save him from all embarrassment, and earn for him the command of those detachments which, being long absent, and operating independently, will achieve for him honor and just rewards. If he is in garrison with troops of other arms, let him visit the arsenals, foundries, and all the great works of military engineering; let him visit the manœuvres of artillery and infantry; there alone will he learn the difficulties and possibilities of attack and defence, and the mutual relations of the different arms. If on the frontiers, or during an armistice, foreign troops are near, let him visit as frequently as practicable their outposts, their bivouacs, camps, or quarters; let

him follow their manœuvres, and let his military eye faithfully observe their improvements, that he may apply them in his turn. In short, let the officer remember that fitness confers right, and that, whatever may oppose, right must always triumph in the end.

Officers should remember that they are always estimated by the first impressions they make upon their men, when assuming their commands. The soldier is too much interested to know how far he may confide in him, on whom all that is dearest to him will depend—his happiness, his honor, and his life—not to scan his future leader with closest scrutiny. Let officers consider this, and remember that the moment is a decisive one; for as they show themselves then, so will they be judged ever after.

# CHAPTER VIII.

## HORSES.

Some thirty-five centuries ago an inhabitant of the land of Uz, named Job, more noted as a patient and sorely afflicted saint than as an authority on cavalry, in one of his outbursts of poetic enthusiasm, inspired by the grandeur of the warhorse, gave an utterance to this brilliant and magnificent description of his qualities: "The glory of his nostrils is terrible. He paweth in the valley, and rejoiceth in his strength; he goeth on to meet the armed men. He mocketh at fear and is not affrighted; neither turneth he back from the sword. The quiver rattleth against him, the glittering spear and the shield. He swalloweth the ground with fierceness and with rage; neither believeth he that it is the sound of the trumpet. He saith among the trumpets, Ha, ha! and he smelleth the battle afar off, the thunder of the captains, and the shouting." In what estimation the horse was held in very ancient times may be gathered from Solomon's song, where, in his fervor, he exclaims: "I have compared thee, O my love, to a company of horses in Pharaoh's chariots." Homer portrays the horse as a sensitive being, and relates that the steeds of Achilles wept at the death of that hero; and in Virgil's Æneid, as Œthon, the charger of Pallas, follows the remains of his master to

burial, his eyes are filled with tears. Some may interpret this as a purely poetical conception of the animal, but Pliny, the naturalist, positively asserts that horses often thus bewail the loss of their masters, and, moreover, affirms that when King Nicodemus was killed, his horse refused to eat, and starved himself to death. However this may have been, certainly our modern horses have become more matter of fact; and for this, as well as for other reasons, the ladies of to-day may repudiate the comparison of Solomon; and perhaps, also, our young men's experience does not entirely tally with the testimony of Job.

Indeed, we might infer from the usual tone of reasoning on horses, and on the art of training them, that by nature they are the very embodiment of wickedness and perversity, and gentle and docile only by exception. Only a hundred years ago, however, Buffon, in his "Natural History," thus describes the horse: "The noblest conquest achieved by man is that of this proud and mettlesome animal, which shares with him alike the hardships of war and the glory of conflict. As dauntless as his rider, the horse scents danger and confronts it; he accustoms himself to the clash of arms, he revels in it, he seeks it, and burns with the same fiery impatience. He likewise shares his pleasures; in the chase, in tourneys, in the race, he glows with brilliancy and ardor. But as tractable as he is daring, he curbs his hot impetuosity, and knows how to check his impulses; he not only yields to the rein that guides him, but seems even to consult his master's desires; and always obeying his directions, plunges forward, slackens his pace, or halts, in perfect conformity with his wishes. He is a creature that renounces his own existence to live solely by the will of another; who even knows how to forestall it, and by the promptness and precision of his movements, to give expression to it; who understands as much as is desired, and performs only what is demanded; who, unreservedly renouncing himself, shrinks

from nothing, serves with all his powers, often beyond his strength, and even dies, the better to obey."

The truth is, that the horse is all of this, or none of it, according to the character of his education. The animal that shies at every trifle, and makes a falling leaf an occasion for foolish pranks, will, if properly trained, carefully observe all that happens along his way, even give notice of his apprehensions to his rider, but still obediently follow the directions of the latter, provided he himself knows his own purposes and how to communicate them to his beast. In this respect some nations excel others, and we regret to say that this superiority does not always keep pace with civilization. The Arab, whose horse is his companion, knows by tradition what we shall never learn by rule. The Indian, who catches or steals his horse, is wonderfully dexterous in breaking him in by brutal force, without heeding, we grant, the amount of injury he inflicts—for they cost him little—but, for the time being, turning them to good account. The Numidian cavalry managed their horses without a bridle, simply with a thong of leather or a whip; and in many countries, the peasantry may even yet be seen guiding their horses without this aid, by means of the voice only, and the open hand applied to the neck. Like them, we, too, might learn all this, if we had nothing else to do; and, like them, we would probably hold our cherished notions and prejudices, and deem that method the best which we had always practised, and which best suited our purposes. But though these several modes of riding and training contain in germ the elements of horsemanship, it is plain that they are unavailing for purposes of instruction in the art, unless reduced to rules; and furthermore, that unless these rules are founded on general principles, the art cannot be said to partake of the character of science. How far it has mounted toward that height, it is not easy to determine; but certainly since Seydlitz in Prussia, and Melfort

in France gave the impulse, great progress toward it has been made in all Europe.

Before them, many systems had successively prevailed, each of which, after temporary popularity, had yielded to some other; and it is to be regretted that no serious and impartial study has yet been made of the means employed by the early masters of the art, as nothing could so much aid our progress or strengthen our faith in present systems, as a clear understanding of the fallacy of the principles on which their art was founded. Unfortunately, their efforts have not always received that consideration to which they seem entitled, and we more frequently find them abused than disproved. For instance, the subject is thus disposed of by a modern writer on cavalry, himself an author on horse-training: "We have had a variety of absurd systems in Europe within the last three centuries, and each of them, while it lasted, was productive of great mischief. Yet every one of them had its bigots and enthusiasts, who looked upon any proposed variation or change as a shocking heresy. A master of the art, the celebrated Grisone of Naples, who was called the regenerator of the art of horsemanship in Europe, solemnly laid down the following instructions for his pupils: 'In breaking in young horses, put them into a circular pit; be very severe with those that are sensitive and of high courage; beat them between the ears with a stick,' &c. We now laugh at his pit and repudiate his stick, but both pit and stick had their reign, as other absurdities have had or still have. Grisone's followers, Pluvinel, Newcastle, La Guérinière, Montfaucon, and others, substituted the cavesson, the longe, and the whip. They tied their horses to the stake (the pillars) and beat them, to make them raise their fore legs, &c. I defy any one to find out from their long rambling books on equitation, how to begin, how to proceed, or how to overcome, by degrees, each difficulty offered by the horse; and these difficulties, be it

observed, arise regularly and in succession with every horse submitted to training. The question is, how to break in a number of horses, and upon what system to conquer these difficulties one by one. The old pedants could have given no answer to this question, nor am I aware that it can be answered by modern practitioners or system makers, or followers of existing systems or regulations."

National prejudices, as well as a want of agreement upon the essential constituents of horsemanship, have further contributed to retard the progress of the art. "The French," says Captain Nolan, "have never been an equestrian people, and the Germans must certainly yield the palm of horsemanship to the English." But neither the French nor Germans can be convinced of this; and on the Continent, though the English are conceded to be excellent rough riders, their skill in military equitation is thought by no means equal to that displayed by them on the race or hunting ground. Indeed, this opinion seems to have some currency in England itself, if we consider the number of German instructors now employed there in government establishments, among others in that at Maidstone, the superintendence of which was assigned to an officer, formerly of the Hanoverian hussars, in preference to Captain Nolan, who was a candidate; and it has been intimated that this may account for some of the strange remarks on foreign horsemanship, which occur in his work on Cavalry Tactics. "The case, "says Colonel Beamish, "is not fairly stated by the gallant author, and his representation of the military seat, as taught at Maidstone, in the frontispiece to his work, is quite a caricature, while his illustration of the ideal seat might pass for the effigy of a drowsy sportsman, sitting easy at a cover side. Although it is not likely that our present excellent system of military equitation, founded upon a careful study of the practice of other nations and long experience, will

be at all affected by any disparaging reflections that may be made upon it by ungenerous aspirants, still some of these statements and allegations are so inconsistent with actual practice and instruction, that it is only an act of justice to our riding establishments to expose them." This rectification by a brother officer may put us on our guard against some of the author's prejudices, which unfortunately detract greatly from the merit of his work, otherwise distinguished for much ability and originality.

But if personal considerations may have biased his judgment of Continental methods in general, he is very warm in his commendations in the following exception: "It seems to me," he observes, "that the only man who has entered fully on the subject, and pointed out clearly how to attack each point in succession, in order to gain the mastery over the horse, is Monsieur Baucher;" and this testimony is the more noteworthy, proceeding from one whom no one will suspect of undue preference for anything not English. It is about twenty years since Mr. Baucher published a new system of horse-training, which for a time attracted a multitude of enthusiastic admirers, among them Captain Nolan, who himself published a treatise on the subject some time after, substantially the same as the preceding; and to show the necessity of such a work in England, he exhibits the following melancholy picture of military horsemanship in that country: "The continued working at the horses' mouths now practised in the service, the attempt to throw the horses on their haunches by strength of arm, sawing the snaffle from side to side, teaches them to lean heavily on the hand, ruins their houghs and mouths, and wears them out before their time. The attempting to work shoulder in and passage, before the horse has been taught to obey the pressure of the leg, is simply absurd. It rouses their temper and makes them restive. To rein a horse back before the head is brought home, and the animal has learnt to obey the leg, is

qually absurd; for the horse, with his nose stuck out, can only e backed by force, or by striking his fore legs with a whip, a ommon practice in the riding schools; he then steps to one de or the other; you cannot keep his haunches in the straight ne, unless he has been taught to obey the pressure of the leg; he end of this generally is that the horse gets his hind legs nder him, is pulled back upon them, and the whole weight of an and beast is thrown on his houghs; the rider pulls again o make him go back, the poor beast cannot do it: no earthly ower could move his hind legs, and in self-defence, and to scape from pain, the horse rears, the natural result of trying o back him by sheer strength of arm, and before he was pre- ared to yield to hand and leg. The troop horses that go hrough this rude treatment join the ranks with their action ramped and spoiled; they are seldom free from blemish, and heir capability of long service has been greatly impaired. Mount any troop horse, and you will find him hard mouthed nd stiff necked. Few, if any of them, rein up or yield to he hand; they are all down on the forehand, and so accustomed o be held fast by the head, that if you yield the rein to them n the least degree, they go off into a gallop at once, and then oth hands of their riders are scarcely sufficient to stop them."

This, truly, is deplorable enough; and to correct the evil, e offers his own system, whose main features he sums up in he following brief outline:

"I. The horse is gently used; the progress is gradual, but ertain.

II. For a few days he is ridden on the snaffle, with a loose ein, at a walk or a trot.

III. He is then bitted, and a few simple lessons teach him o yield to the feeling of the rein and the pressure of the leg.

IV. Next he is collected and got in hand, not by pulling nd sawing at his mouth, but by gradually pressing him with

the leg, till he raises himself off the bit and gathers himself up at a walk, when he can be collected and put together to any extent required, by the judicious use of the spur. As all this is done at the halt or at a walk, the horse undergoes no fatigue.

V. Reining back then perfects the horse in the use of his limbs and in unqualified obedience to the rider's hand and leg. This once attained, a few lessons will teach the animal to canter, change leg, passage, and pirouette, and the horse becomes a perfect charger in a very short time, without having in any way suffered from his breaking; indeed, without having been once tired or overwhelmed during the whole of his education, and from his mouth having been gently dealt with, it remains fresh and good, instead of being hard and callous."

These are the main features, indeed, of Baucher's system, as duly acknowledged by Captain Nolan in his work on horse-training; and we cheerfully own that for army use, in many respects, we prefer the latter, since it is less exclusive, better adapted to military modes of instruction, and divested, moreover, of all the reasons and arguments which the original inventor felt compelled to state when his system was yet a novelty, in order to convince his readers of the superiority of that system over all others. And although he never quite succeeded in this, and has even lost a number of his first converts who had been dazzled by its extraordinary results, it cannot be denied that he has largely contributed to the progress of the art, and that he merits great credit for having brought to light many principles which, although not wholly new, have been better defined and more clearly established by him than by any that had preceded him. Hence his system will always be consulted by those who wish to give studious attention to horsemanship, and much of it will be retained, whatever may be the future development of the art.

"The Baucher system," says General McClellan, "was

lly tried at Saumur, and I was informed that it proved to be applicable to the general service. Some few persons, exceptions to the general rule, did wonders with it; but it generally did harm, and is regarded as a very dangerous system in the hands of most officers and men; it is not at all in use at Saumur, or anywhere else in the French service. I will here take occasion to repeat that I took especial pains to make inquiries in relation to the Baucher system, of the cavalry officers of all the countries which I visited, and that the reply was uniformly the same; that is, that certain parts of the system—those relating to obtaining command of the muscles of the head and neck —were good, and could be applied with advantage by individual officers to their own horses; but that the system would never answer for general introduction in the service."

Since Baucher's work, there has been no lack of new systems or modifications of old ones, but none has been eminently successful, nor has any one attracted special attention except, perhaps, that of Count Savary de Lacosme-Brêves, which he entitles "Theory of Centaurization," and of which the following "preliminaries" will give some idea: "The following lessons are designed to establish between man and horse a harmony in the two instincts, the two intellects, the two sensibilities, the two contractilities, the two memories, the two volitions, the two expressions, and the two centres of gravity. Man and horse having reached their moral and physical union, there will be in their action but one intellect, one centre of gravity." For the benefit of those who may chance to be somewhat puzzled by this, we add the author's explanation of the "Spirit, Reason, and Object of Centaurization." "The union of the body of the rider with that of the horse depends on the intimate relation which the man is able to effect between his own nervous system and that of his beast. The moral union will exist if the rider, by addressing the five organs of

sense—sight, hearing, feeling, taste, and smelling—can impress the horse's brain, and originate in him the will to perform the movement which he desires. The physical union depends on the intimate and continuous relation between the three agents of the body of the man and the points of the horse's body on which the former rest, or are intended to act, as well as on the manner in which the rider abandons his body to the movements of the animal. Without this moral and physical union, harmony between man and beast is impossible; and without this double condition, the two beings will be at variance, that is there will be both moral and physical disunion. The horse's organs being unpleasantly affected by his rider, confusion of the brain will ensue, and from the moment when common understanding disappears, two intellects will be seen to produce themselves instead of one, two centres of gravity instead of one, and consequently a struggle between man and beast." How clear and simple withal! and how solacing to the recruit who in the "consequent struggle" has parted company with his horse and reels with pain, to know that his mishap is wholly attributable to an ungracious displacement of his centre of gravity. Out of a proper regard for that region of his person, he will be more careful thereafter, and endeavor to save it from subsequent damage by all the energy of his will; but whether such a system will ever flourish in our armies is somewhat doubtful, on account of the difficulty of convincing the soldier that they can be made to stick to their saddles through the agency of metaphysics and animal magnetism.

In the army, men are brave and robust, but not much given to abstruse thought. If they recognize colors, they do not discriminate intermediate tints; they understand plain talk, but care little for philosophizing. They will do what you bid them, but they expect clear results. Riding in the ranks is moreover, something totally different from pleasure riding, and

his delicate feeling of hand and leg, which is the criterion of ne horsemanship in the school, is worse than useless in the ressure of the ranks. All systems which aim at rendering the orse a mere machine, whose every motion depends on the will f his rider, are unsuited for the army. Much must be left o the intellect of the animal, when, in a mêlée or rough and roken ground, he must choose where to set his foot as well as ry to obey his master. In military riding, only the will of the orse must be rendered submissive to that of his rider, while is mode of action is best left to himself. To train all horses n the same way would be like bringing up all men for one and he same kind of business; and there is as wide a difference etween the action of a charger in the field and a pony prome- ading in the park, as there is between that of a zouave storm- ng a redoubt and a dandy attitudinizing in a drawing room. And in this lies the chief objection to the system of Baucher. His horses are well, nay, elegantly trained, but they lack that pirit of vigorous daring and rash impetuosity which should lways be retained and even cultivated in the war horse.

"If you wish to have a good war steed," says Xenophon, you must exercise him in everything which may be required n war. He must leap ditches, scramble over walls, spring up scents, dash down declivities, and be trained to charge on lopes, uneven ground, and transverse roads and paths. Many orses fail, not for want of ability, but for want of experience n these things. Let them, therefore, be instructed, trained, ccustomed to all they ought to know, and they will excel in verything, provided they are healthy and not vicious." From Xenophon's time to the present, there have undoubtedly been nany fine horsemen and many periods of fine riding, but no ne system has ever yet been known, even temporarily, to super- ede all others. They all have had their merit according to he views taken of the subject; but as to military riding, until

we meet with a better definition, we still prefer that of Gener
Bohan, who wrote some seventy years ago: "The art of ridin
teaches and shows the position to be taken on horseback so
to be there with the greatest security and ease; it at the sam
time affords the means of leading and directing the horse wit
the utmost facility, and of obtaining from him by the simple
method and with the least fatigue, the most exact and perfe
obedience in everything which his strength and conformatio
allow. He is the good horseman, therefore, who, firm an
easy in his seat, has acquired both the knowledge of what h
may ask of his horse and the practice of the best means o
enforcing obedience. And that is the well trained horse whic
understands the intentions of his rider from the slightest of h
movements, according to given principles, as executes the
with promptness, agility, and vigor."

This is at least plain and sensible, as must be granted b
every one, for whatever purpose he may have trained his hors
But however simple the art may be, it is obvious that bot
man and horse, to become proficient, must commence the
education at an early age. The Arabs, who in horsemanshi
are unquestionably our masters, have their horses mounted
even eighteen or twenty months, not by an adult, but by
boy, who leads them to the well and to their pasture. Suc
exercise is suitable for both; the boy learns to ride, and th
colt to carry a weight proportioned to his strength. It is th
that the Arab horses are rendered gentle, docile, and used
steady work. "During my long career, in my tribes, with m
friends, or among my servants," says Sid Hamed-ben-Moha
med-el-Mokrani, calif of Medjana, and chief of one of the mo
illustrious families of Algeria, "I have seen more than tw
thousand colts raised, and I may affirm that all whose trainin
was not commenced at an early period, and according to corre
principles, invariably grew up into indocile, disagreeable horse

utterly unsuitable to war. I also affirm that on long and rapid journeys, at the head of twelve or fifteen hundred warriors, I have never known even lean and meagre horses, but accustomed from early age to labor, to leave my standards; while fat horses, and such as were mounted too late, have always been left behind. My conviction on this point is so well settled, that being lately at Cairo in want of some horses, I invariably rejected, among those that were offered to me, all that had not been mounted at an early period.

How was your horse brought up? was always my first question.—My lord,' replied an inhabitant of the city, this slate-colored mare has been raised by myself, and has been brought up like one of my children; always well fed, well lodged, and well taken care of; I only commenced riding her at the age of four. See how fat she is, and how sound are her limbs.—Well, my friend, keep her; she is your pride and that of your family; it would be a shame to my white beard to deprive you of so beautiful an animal. And you, addressing an Arab whom I knew to be a child of the desert by his sun-burnt and strongly-marked features, what has your horse been doing all the time?—My lord, answered he, at an early hour I have shaped his back to the saddle and his mouth to the bit; with him I have often been on distant expeditions; he has passed many days without water, and many nights without food; his ribs are wellnigh bare, it is true, but if you meet the robber of the desert, he will not leave you in trouble; I swear so by the day of judgment, when Allah will be Kadi and the angels witnesses.—Put the sorrel in front of my tent, said I to my servants, and satisfy this man."

It may be interesting as well as instructive to consider a few of the axioms and aphorisms current among a people with whom the raising and training of horses are matters of religion, and to whom the Prophet has said: "Whoever raiseth and

traineth a horse for the Lord is counted in the number of those who give alms day and night, in private as well as in public. He will find his reward. All his sins will be forgiven him, and never will any fear come over him and dishonor his heart."

"To be inattentive to the early training of the colt is simply to spoil him for the purposes of war. Let your colt be domesticated and live with you from his tenderest age; and when a horse, he will be simple, docile, faithful, and inured to hardship and fatigue.

"If you would have your horse to serve you on the day of evil, if you desire him to be a horse of truth on the day of combat, make him sober, accustomed to hard work, and inaccessible to fear.

"Do not beat your horses, nor speak to them in a loud tone of voice; do not be angry with them, but kindly reprove their faults; they will do better thereafter, for they understand the language of man and its meaning. If, perchance, however, you should meet with an animal insensible to kindness, hesitate not to employ the power of your spurs, but in such wise that he never forgets the punishment inflicted upon him.

"Good spurs add a fourth to the skill of the rider, and a third to the vigor of the horse.

"To prepare a too fleshy horse for the fatigues of war, make him thin by exercise; never by withholding his food.

"The man who gives not a steady walk to his horse excites pity, for the walk is the gallop of always.

"At the start, the rider must not fear to play a little with his horse, for it will relax his limbs and make him easy for the rest of the day. In the same way, after a hard day's march, on returning to his tent, let him work his horse a little; the women of the tribe will applaud him and say, 'There is such a one, son of such a one!' Moreover, he will test the value of his beast.

"If you have a long day's march before you, spare your horse at the start; let him frequently walk, to recover his wind. Continue this until he has sweated and dried three times; then, when he has emptied his bladder, tighten the girth, and you may ask from him whatever you please, he will not leave you in difficulty.

"Under any circumstances, a good horse must be able to travel thirty miles a day. A middling horse, if need be, must make two days' march in one; a good one can make even three; but a full-blooded steed, with a skilful rider, may accomplish five days' march in one.

"Use your horse as you do your leathern bottle; if you open it gently and gradually, you easily control the water within; but if you open it suddenly, the water escapes at once, and nothing remains to quench your thirst.

"If you pursue an enemy, and he commits the fault of urging on his horse, restrain yours, and you are sure to overtake the fugitive.

"If your horse gallops and other horses follow, do not urge or excite him; he will be excited enough himself.

"If on a rapid course you can afford your horse a brief rest, by all means do so; and if you must proceed again, the moment of starting will be when the mucus ceases to flow from his nostrils.

"In case of life and death, if you feel that your horse is failing, and his breath nearly spent, remove his bridle, if only for a moment, and with your spur give him a blow on the croup, hard enough to draw blood. He will make water, and perhaps may yet save you.

"Never run up or down hill if you can avoid it. On the contrary, slacken your pace. 'Which do you prefer,' was asked of a horse, 'the ascent or descent?' 'A curse be on their point of meeting!' was the answer.

"When debouching on the plain after a long march through difficult paths in the mountains, it will benefit your horse to run him for a while.

"Unless forced to do so, never make your horse run during the intense heats of summer. 'Don't make me run in summer,' hath said the horse, 'if you wish me some day to save you from your enemy.'

"He who can, and does not stop his horse to allow him to make water, commits a grave sin. His companions must stop also; it is a meritorious action, for which they will be rewarded.

"If on the march you encounter a strong head wind, pursue a circuitous way, if possible, and do all in your power to protect your horse from it; you will thus save him from disease.

"If a horse, when reaching the night halt, shakes his harness and immediately makes water, paws the ground and neighs when you bring him barley, and then, as soon as his mouth is in the bag, begins to eat with ravenous appetite, there is no occasion to tarry on your way.

"If you wish to learn what reliance you can place on the vigor of your horse, at the moment of dismounting after a day of excessive fatigue, take him by the tail and pull with all your might; if he resist and remain as if rooted to the ground, be assured that he will serve you well in the day of combat.

"Make your horses work and make them work again. Inaction and fat are the great peril of a horse and the main cause of all his vices and diseases.

"Buy a good horse; if pursuing, you overtake; if pursued, the eye will soon fail to note by what path you escaped.

"Never buy a horse until you have ascertained that his moral qualities equal his physical. Beware lest you find a lion's skin on the back of an ass.

"Never buy a horse that is sick or wounded, even though you know the cause, and deem it trifling. Buy for use; not for cure.

"Do not at once despise a horse that has been fired, for often it may preserve him and secure long and valuable services.

"Prefer the steed of the mountains to him of the plains; and the horse of the plains to him of the marshes. The last is good for the pack saddle only.

"Prefer dark to light coats; white spots on the head and limbs, especially those that are large, long, or high, are sure signs of degeneracy, and consequently of weakness.

"Never buy for your own service a horse that, when you give the rein, cries 'Hold, sir!' and when you check, 'Let go!'

"Beware of a horse that kicks when spurred, that shuns his rider, or fears powder, for he will fail you in the day of combat.

"For toil and combat always choose a horse of seven years and beyond. The day when you and the enemy are so engaged that your stirrups rub and clang together, he alone can extricate you from the mêlée, and bear you to your tent in safety, even were he pierced by a bullet. Our elders used to say, 'Seven years for my brother, seven years for me, and seven years for my enemy.'

"Observe your horse when he is drinking at a brook. If, in bringing down his head, he remain square, without bending his limbs, he possesses sterling qualities, and all parts of his body are built symmetrically.

"As you would shun the plague, so shun a horse with sunken breast and straight shoulders. But one whose croup is as long as his back and loins together, take him with closed eyes, for he will prove a blessing.

"Four things he must have broad: front, chest, loins, and limbs; four things long: neck, breast, forearm, and croup; and four things short: pasterns, back, ears, and tail.

"If you would know at a glance the value of a horse, measure him from the last joint of the tail to the middle of the withers, and from the middle of the withers to the tip of the upper

lip on a line between the ears. If the measures are equal, the horse is good, but of ordinary speed. If the hind measure is longer, the horse is of little worth; but if the fore part be longer, rest assured that the animal has distinguished qualities, and the greater the difference, the greater will be his value."

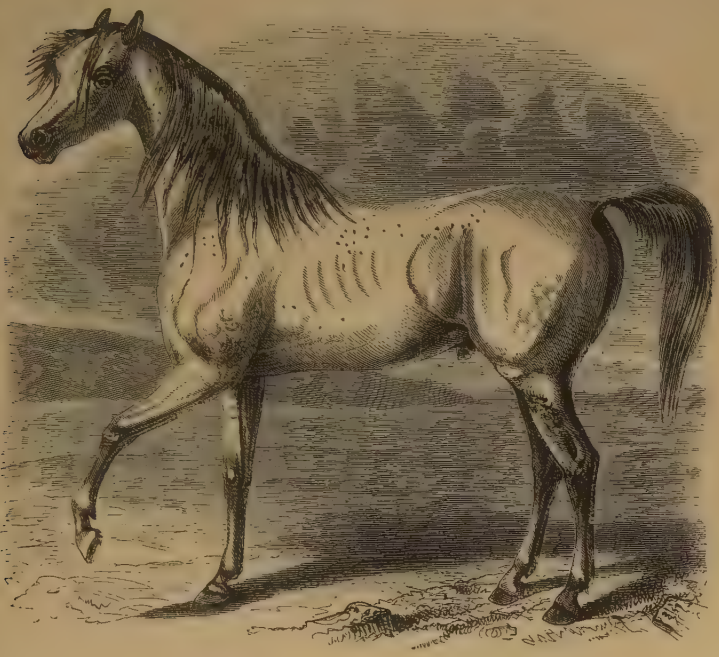
This last rule may be new to many readers; but Count d'Aure, chief riding master at the cavalry school of Saumur, states that he has applied it to a vast number of horses with whose qualities he was previously acquainted, and that he never knew it to fail.

We easily recognize, in the foregoing maxims, the spirit of a people with whom the horse is an object of warmest affection, and their most constant pre-occupation, and whose competency in all that concerns him is universally acknowledged. Though containing nothing substantially new, the quaintness of the language imparts a charm to the subject, and we cannot but be pleased to find in a few idiomatic and terse sentences the essence of many long and learned treatises.

Pure Arabs are considerably smaller than our modern thoroughbreds, seldom exceeding 14 hands 2 inches in height. The head is remarkable for the width across the forehead, which is also full and square, while the muzzle is finer, the face more hollowed out, and the jaws more fully developed in their proportions than in any other breed with which we are acquainted. The eye is full and soft, yet sparkling with animation on the slightest excitement; the ear is small; the neck arched; the shoulders oblique, but muscular; the withers moderately high and thin; the chest rather light in girth, but the back ribs deep in proportion, and the hips, though narrow, well united to the back by a rounded mass of powerful muscles. The croup is high, and the tail set on with a considerable arch. The bones of the legs are large in proportion to the size and the tendons full and free, the suspensory ligaments being par-

ticularly strong and clean. The hocks are large, and free both from curbs and spavins; and, lastly, the feet, though small, are sound, and capable of bearing an amount of battering which few well-bred horses can sustain. The following engraving shows most of these points extremely well, and the general characteristics of the breed are particularly well indicated by the artist, who took the sketch from a celebrated Arabian of high caste in the stud of the King of Würtemberg.

Fig. 84.



An army requires a great number of horses for its cavalry, artillery, and trains. Government must, therefore, organize systems of remounting as well as of recruiting. Each country has its own peculiar method of remounting, depending on its financial condition, its geographical configuration, and its resources in horses. England's resources, for instance, are very

great with little cavalry. She has, therefore, no need of remount establishments, since private enterprise is more than sufficient. Russia has vast resources in her military colonies, and is otherwise rich in horses and forage. Austria has extensive breeding establishments; in 1820 they furnished thirty thousand horses at once. Nevertheless, Austria buys abroad, and her system of remounting is mixed, and comprise both direct reproduction and purchase. So it is in Prussia. France maintains but one government stud, properly so called, at Saumur, but has nine remount depots, three in Algeria and six in France, at each of which there are stallions of the breed most suitable for crossing with the mares of the vicinity. At the proper seasons, these are distributed among the villages, to cover the mares of the country gratuitously. The owners of the colts are under no obligation to sell them to the government, but usually find it their interest to do so.

The mode of purchase in France is quite peculiar, and is thus described by General McClellan: "The animal is brought to the commandant of the remount depot, and submitted to his inspection without any price being named. If the commandant finds him unsuitable he is at once rejected; if the contrary is the case, he is brought before all officers of the depot for a thorough examination. Each officer then writes his estimate of the value of the animal on a slip of paper; these papers are placed in a hat and shaken up, so that the estimate of each officer may not be known; the mean of these estimates is then taken, and the commandant offers that price for the animal. If the owner accepts the offer, the price is paid at once; if he refuses, the horse is at once sent away, for no bargaining is allowed. It often happens that the owner receives a larger price than he would have demanded. This system is stated to work admirably."

The horses purchased are over four and under eight years

of age, and remain in the stables of the depot until sufficiently developed or accustomed to army regimen. When ready for the service, they are assorted according to size and breed, in order to obtain for the various regiments uniformity, not only in size, but also in gait, action and hygiene. In most countries the system of remounting is one of purchase, which is made either directly by government, or by the different regiments; and immediately from the farmer and breeder, or through contractors. Direct purchase by government from the breeder is evidently the best, and when practised as above described, leaves no room for fraud. Purchase by the regiments presents serious inconveniences, the least of which is competition among the regiments; it moreover leads to abuse, such as speculation by individual officers or committees, and even to fraud. Purchase through contractors is the worst of all, for, as a class, they are unscrupulous and demand enormous profits, and in some instances, horses, for which they have received the regular price, within a month afterward have been notoriously hardly worth the skinning.

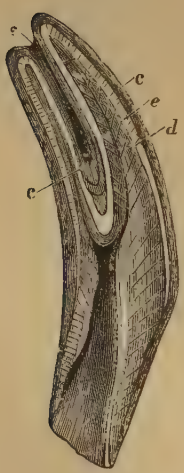
With remount depots, a government may buy at all ages. Though it would not be profitable to purchase animals too young, obviously, they should be bought before they cease to show their age. This, as is well known, is determined by the appearance of the teeth, which changes with advancing years, the number, quality, and size of the teeth indicating the respective ages.

The age of all horses intended for the service, is reckoned from the first of May; but it is very probable that the exact dates of their birth will differ by a variation of several months; hence the use of the terms "early" and "late foal." To this fact, as well as to the frauds occasionally practised by breeders and dealers, who knock out the colt's teeth, the officer employed to purchase remount horses should direct especial attention.

As one year causes a material difference in the market value of a horse, sellers sometimes endeavor to make a colt appear a twelvemonth older than he really is; and to effect this, they force out his teeth, which are naturally replaced by the permanent ones in succession, and thus give a false index of age. By an experienced person the deception is readily detected, and with a little attention to the following explanation, which, in substance, we borrow from Walsh's excellent work on the horse, any one may soon learn thoroughly to understand the subject himself.

The teeth are developed within their appropriate cavities or sockets, which correspond exactly with their number in the upper and lower jaws, being narrower in the lower than in the upper. In the embryo, they are nearly all in a state of active growth, covered and concealed by the gums but soon after birth, they emerge in pairs, the first set or milk teeth being in course of time superseded by the permanent ones, the complete number of which consists of six incisors, two canine and twelve molar teeth in each jaw, in horseman's language called respectively, nippers, tushes, and grinders. Each tooth is composed of three distinct substances, cement, enamel, and dentine, the disposition of which is indicated in Figure 85, representing the section of an incisor tooth of natural size, in which *c* shows the cement on the external surface and reflected within the cavity; *e*, the enamel, both external and reflected; *d*, the dentine; and *s*, the tartar contained within the cavity and blackened by decomposition.

Fig. 85.




In consequence of this arrangement of parts, the teeth, as they wear down, present a different appearance, according to

the degree of attrition they have undergone, and on this fact is founded the means of determining the age of the horse, after he has shed his milk teeth, which, as a rule, he does in pairs at certain, stated periods. In order, therefore, to be able to estimate the age of the horse from his teeth, it is necessary to ascertain as nearly as may be, the exact time when each pair of his milk or sucking teeth appears, and afterward, the period when these are replaced by the permanent teeth. This has been found to be as follows:

By the end of the first year, the colt has cut his twelve nippers and sixteen grinders, which usually pierce the gums at the following times. Before birth, the eight anterior grinders have generally shown themselves, followed about a week after foaling, by the two central nippers. At the end of the first month, another grinder makes its appearance all round, and in the middle of the second month the next nipper shows itself. By the end of the second month, the central nippers have attained their full size and the second are about half grown, requiring another month to overtake their fellows. Between the sixth and ninth months, the corner nippers are cut, and toward the end of the first year reach their full size. These first nippers are considerably smaller than the permanent teeth, and somewhat different in shape. They are more rounded in front, and more hollow toward the mouth, the outer edge being at first much higher than the inner. As they wear down, these two edges soon become level, but the corner nippers maintain their inequality for a long time. At six months the central nippers are almost level, with the black mark in their middle wide and faint; and about the ninth month, the next nipper on each side above and below, is also worn down almost to a level surface.

During the second year, the following changes take place: In its first month, though occasionally even toward the end of

the previous year, a fourth grinder is cut all round, which commences the set of permanent teeth, only the first three molars being shed. At a year and a half the mark in the central nippers is much worn out, and has become very faint; the second is also worn flat, but not so faint; and the corners are flat, but present the mark clearly enough. In colts which have been reared on grain and much hay, the wearing down proceeds, of course, more rapidly than in those fed upon grass alone.

Fig 86.

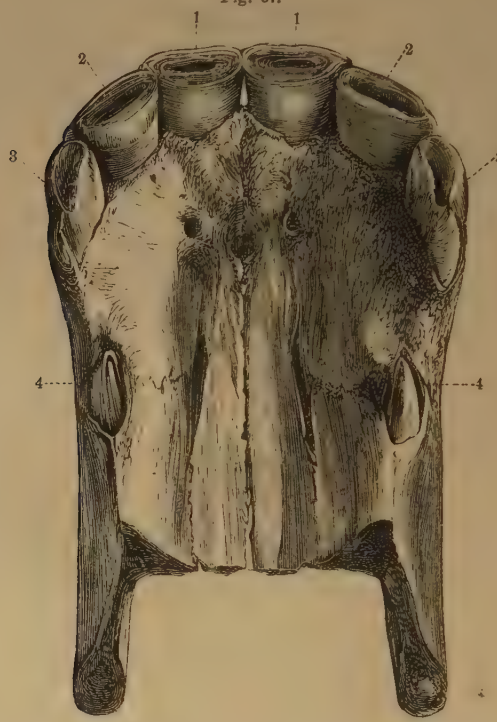
The second dentition occurs in the third year, and is effected in the same order in which the milk teeth made their appearance. Both sets are contained within the jaw at birth, the permanent teeth being small and only partially developed, and lying deeper than the milk teeth. As the mouth grows, it

ecomes too large for its first set of teeth, whose roots being ressed upon by the increasing permanent set are gradually bsorbed, and allow the new teeth to show themselves, either n the places of the former or by their sides, in which case they re called "wolf's teeth." This change proceeds in the same rder as the cutting of the milk teeth, commencing with the rst grinder, which is shed and replaced by a permanent tooth arly in the third year, a fifth permanent grinder making its ppearance about the same time. Toward the end of this year he sixth grinder shows itself, but grows very slowly, and the entral nippers, above and below, fall out and are replaced by ermanent ones, which, as has been already remarked, are con-iderably larger in size and somewhat different in form. 'igure 86 shows the appearance of a "three-year-old mouth;" , 1, are the central permanent nippers nearly full grown; , 2, the milk teeth worn down; 3, 3, the corner milk teeth till showing the mark; and 4, 4, the tushes concealed within he jaw.

At three years and five or six months, the next nipper all ound falls out, and is replaced by the permanent teeth. The orner nippers are much worn, and the mark in them is nearly ffaced. About this time also the second grinder is shed. At our years of age, the mouth differs from that represented in 'igure 86, in the following particulars: The central nippers egin to lose their sharp edges, and have grown considerably in ubstance. The next nipper all round has grown nearly to its ull size, but its edges are still sharp, with the mark deep and ery plain. The corner milk nippers still remain, unless they ave been knocked out for the purpose of fraud to hasten the rowth of the permanent teeth and give the horse the appear-nce of being older than he really is. Between four and a half nd five years, the corner nippers are shed, and, if a horse or elding, the tushes protrude through the gums. These changes

are shown in Figure 87: 1, 1, are the central nippers, muc worn down; 2, 2, the next pair, fully developed, with thei edges slightly worn; 3, 3, the corner permanent nippers, in

Fig. 87.

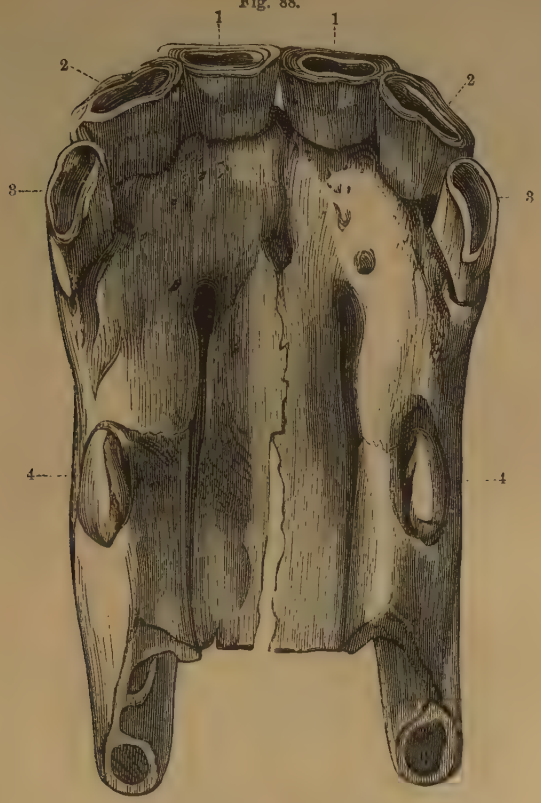



state of growth, with the edges of the cavity sharp, and the mark very plain; 4, 4, the tushes, showing themselves through the gum, but not full grown.

At five years the number of teeth is complete, and from this date it becomes necessary to study their aspect in both jaws. Figure 88 exhibits the upper teeth at this age, and a comparison of them with those in the preceding figure will clearly show their slight growth during the half year; 1, 1 are the central nippers, with the mark yet unobliterated; 2, 2 the next nippers, with the mark still plainer; 3, 3, the corner

ippers, with the edges very slightly worn; 4, 4, the tushes, well eveloped, and still plainly showing the groove on the outside.

Fig. 88.




In the lower teeth of the same mouth, the edges of the cen- ral cavities are much-worn away, the central nippers having nly a small black speck in the middle of a smooth surface, vhile the next is much worn, and the corner teeth, though howing the mark very plainly, bear evidence of having been ised. The tush is much grown, with its outer surface regularly onvex, and its inner concave, the edges being sharp and well lefined. The sixth molar is at its full growth, and the third is hed to make room for the permanent tooth in its place.

These two last named teeth should always be examined in case where there is any doubt about the age. Figure 89 shows the lower jaw of a five-year-old mouth; 1, 1, are the central nippers, with their marks almost entirely worn out; 2, 2, the next nippers, showing marks partially worn; 3, 3, the corner nippers, with the mark plainly seen, but the edges partially worn; 4, 4, the tushes, with the grooves inside almost obliterated.

Fig. 89.

The colt now takes the name of horse, and is presumed to be equal to all the laborious duties expected of him. Although after this time, we can no longer judge of his age by the shifting or shedding of his teeth, we can form a tolerably correct estimate from other signs. When six years old, for instance see Figure 90, that dark, oval-shaped mark in the centre of the two front nippers, 1, 1, usually called the bean, is almos

worn away, but still presents concentric circles of discolored brown tartar in the middle; next to which is the cement, then the enamel, and the dentine with a thin layer of enamel outside. In the next nippers, 2, 2, the marks, though stronger, are also disappearing. The corner nippers, 3, 3, though level with the others, show the mark plainly enough, but the edges of the cavity are considerably worn. The tushes, 4, 4, are higher and stronger, standing up about three quarters of an inch, and having their points slightly blunted.

Fig. 90.

The six-year-old mouth is the last upon which any sure reliance can be placed to determine the age of a horse to a nicety; nevertheless, by attentively studying both jaws, a near

approximation to the truth may usually be made. It is ascertained that the nippers of the upper jaw take about two years longer to wear out than those of the lower; so that until the horse is eight years old, his age may be estimated from them nearly as well as from the lower nippers at six. But as different horses wear out their teeth with varying rapidity, it is found that this is by no means an unfailing criterion. It often happens, even at a much earlier period, that the best judges are deceived by the premature structural alteration of the teeth, produced by mechanical or pathological causes, such as crib-biting, wind-sucking, eating hard food, &c., &c; and the purchaser would do well, when he suspects the marks to have been prematurely obliterated, to satisfy himself that the cause of their disappearance does not lie in any vicious habit of the animal.

Under ordinary circumstances, however, at seven years the marks of the second pair of lower nippers are also entirely worn away, and the tushes are becoming rounded at the point and edges. At eight years old, the upper nippers present an appearance like that already described in the lower nippers at six years old, and the tushes have become rounder and blunter, the upper ones even more so than the lower. At nine years of age, the upper middle nippers are worn down completely. The next pair have a slight mark left, but their surfaces are quite level, and the corner nippers have only a black stain, without any central depression. After nine years the age of the horse can only be guessed at from his teeth, which gradually grow in length and more in a line with the jaw. Up to six years of age, the nippers stand nearly perpendicular to each other, the two sets presenting a slight convexity when viewed together. Afterward the nippers gradually leave the perpendicular and grow in an outward direction, and so, in a very old horse, form an acute angle between them. Thus the section

of each nipper, from oval at its first appearance, after the age of six assumes a more and more triangular shape; but about the twelfth year, this triangular section disappears, and the tooth becomes nearly round. Accompanying this change of form and increase of length, is a change in the color also of the tooth, which becomes a dirty yellow in very old horses, with occasional streaks of brown and black. The tushes wear down to a very small size, and often one or both drop out, as in Figure 91, which represents the lower nippers and left tush of a very old horse, the right having fallen out.

Fig. 91.

Allusion has already been made to the practice of removing the milk nippers to stimulate a more rapid growth of the next set, and thus make the horse appear older than he really is. The cheat will now be easily explained, as well as the mode of

detecting it. We will suppose a colt to be nearly three years old, the age most likely to be practised upon. He ought, at this time, to have two permanent and four milk teeth in his lower jaw. The seller wishes to pass him off as rising four-year old. For this reason he removes the two teeth next to the permanent ones, leaving two permanent ones in front and two colt's teeth at the corners, thus making it appear that the colt is putting up his four-year-old teeth, although he has not yet completed his third year. It certainly requires some experience to detect the trick instantly, but the buyer should carefully note the upper jaw to ascertain whether the teeth there correspond with those below, for the deception is frequently confined to the lower jaw, because it is most commonly examined. If the teeth do not correspond, be assured that art has been used, for the upper teeth are generally shed before the lower ones. There will also be a wound-like aperture in the gums, not to be mistaken; or an effort of nature to fill up the void, which the succeeding permanent teeth are not sufficiently developed to do. These indications, added to the apparent smallness and newness of the front pair of nippers, and the colt-like appearance of the animal, will in most cases be an ample safeguard against such deception.

In addition to the above, dishonest dealers have recourse to another deception, called "bishoping," after the rascal who invented it, and by which an aged horse may be passed off upon an inexperienced person for a six-year-old. The plan is to saw off all the nippers to the proper length, and then, with a cutting instrument to scoop out an oval cavity in the corner nippers, which is afterward burnt with a hot iron until it is quite black. It is extremely easy to detect the imposition by comparing the corner nippers with the next, when it will be seen that there is no gradation from the centre to the corner rings. Moreover, in comparing the lower with the upper

nippers, unless the operator has performed upon the latter also, these will be found to be considerably more worn than the lower, the reverse of which ought naturally to be the case. Occasionally a smart operator will burn all the teeth to a proper regulated depth, and then only a practised eye can detect the cheat. Formerly it was very common to see mouths with the corner nippers burnt to show "a good mark;" but now, since purchasers are satisfied with a nine or ten-year-old mouth, provided the legs and constitution are sound, that practice is almost entirely abandoned.

The natural energies of the horse may be regarded as at their height between the ages of seven and twelve, provided his functions have not been impaired by early ill-usage or over work. Many instances of longevity are credibly attested; thirty, forty, and even sixty years have been attained. The general indications of old age, independent of the teeth, are a deepening of the hollows over the eyes, grey hairs, particularly above the eyes and on the muzzle, thinness and pendency of the lips, sharpness of the withers, sinking of the back, lengthening of the quarters, and the disappearance of windgalls, spavins, and tumors of every kind.

The management of what is generally termed the stabling of young or remount horses also claims our particular attention. No animal, which man has domesticated, experiences so great and so sudden a change in his habits, feeding, and exercise, as the young horse when first removed from pasturage and placed in the stable, which is thereafter to be his almost constant dwelling. His freedom is exchanged for unvarying restraint; accustomed to seek his own food, he henceforth obeys the direction of his master; no longer following his own impulse, he must now yield to that of man; in a word, the change he undergoes is a transition from nature to art, from liberty to bondage, and disease attends its course. Strangles and fevers most commonly

assail him, and although these are not usually dangerous, if proper precautions are adopted, still they have a decided influence upon the constitution of the animal.

When young horses are first placed in a stable, great care should be taken to keep it cool and clean, and give it an abundant supply of fresh air, and, above all, not to allow too many horses to occupy the same stable. Their provender at first should be green food, with oats; but if this cannot be procured, then give them bran mashes or bran mixed with oats. When thus mixed, the bran should not be wet, lest it be swallowed without mastication. Young horses should be allowed as much as they will drink, and for this purpose a vessel of water should be fixed within their reach, or if the stable has iron or stone mangers, a spare stall between each pair of horses may be used. An occasional mild dose of physic is beneficial, but excessive purging must be avoided. As the animal becomes more accustomed to the stable, the amount of bran may be reduced and oats substituted; at the same time the exercise should be increased, but gradually and discreetly, and a full share of work should not be required until he is used to the regular rations and is in good condition.

There is no term respecting horses which has so many and such different significations as the word "condition." The racehorse is said to be in condition when he can gallop a given distance at the very top of his speed, without distress or inconvenience to his natural functions, and this state of system is attained by the most artificial and even unnatural means. The English hunter is declared to be in condition when he carries his rider a long run across a heavy country without failure of wind or muscle; and a New York stage horse, when he performs his trips without sweating or other symptoms of overexertion, although every bone in his body may be counted through his skin; whereas the dealer declares his horse to be

out of condition, so long as a curve of the ribs can be seen, and until every defect is entirely hidden beneath an exuberance of flesh and fat. The term condition, therefore, when applied to horses, must be construed in reference to the purposes for which they are intended.

As the severe exertions exacted from the racehorse and hunter are not required of the cavalry horse, we do not demand for him the same artificial condition to which they are subjected; but as a certain degree of labor is imposed upon him in the performance of military duties, it is neither proper nor prudent to bring him to the plumpness allowed to dealers' horses. The best condition for the troop horse is a natural, healthy state, between the two extremes; not so fleshy as to unfit him for moderate exertion, nor so lean as to prejudice the symmetrical proportions of his frame. To attain this desideratum, the coöperation of several agents is required, the principal being pure air, wholesome food, regular exercise and proper grooming.

Impure air and imperfect ventilation generate more diseases among horses than all the other exciting causes of constitutional derangement. Nor is this to be wondered at when we consider that the animal in his natural state breathes the purest air of the plains and the mountains, culls for his food the freshest and most wholesome herbs, seeks for his drink the most limpid and refreshing streams, exercises himself from the impulses of an unerring instinct, and recruits his strength by repose, impelled only by the dictates of natural necessity. But view him in his domesticated state, the slave of man, the pliant instrument of his caprice and pleasure, chained a prisoner in a narrow stall for twenty hours out of every twenty-four, and often longer; fed upon dried and fermented provender, according to the whim or means of his owner; in some instances overtasked beyond the power of his endurance, and in others

injured in every function by the want of sufficient exercise, made to breathe an atmosphere charged with the foulest impurities, and to drink water often tainted and unwholesome, while his very rest is disturbed by the chains of his fellow captives.

The air in all stables is more or less impregnated with gases detrimental to animal health; it therefore becomes the duty of those who have the charge of them, to lessen, as much as possible, the evil consequences arising from their existence. Every one, when entering a close stable, must have experienced a pungent, irritating sensation about the eyes and nostrils, often strong enough to cause sneezing, tears, and headache. This is the effect of ammoniacal gas generated from the fæces and urine; and if it acts so quickly upon man, who from earliest infancy has inhaled an impure atmosphere, what must be the result of its constant action upon the delicate mucous membrane of an animal which in its natural state breathes the freest airs of heaven? The answer is, inflamed lungs, influenza, catarrh, chronic cough, glanders, farcy, ophthalmia, blindness, and even death.

The utmost care should therefore be employed to procure an abundance of fresh air. It is obtained by admitting a plentiful supply of it into the stable, and having vents so placed as to allow the impure atmosphere to escape; by keeping the stable clean, removing as soon as possible all evacuations, and by avoiding an accumulation of manure or bad litter within the building or near the doors and windows. In badly paved stables, where the urine lodges between the bricks or stones, great benefit will be derived from a liberal use of plaster of Paris, which absorbs the free ammonia. There is not much mischief to be apprehended from imperfect ventilation in the day time, when there is constant occasion for opening the doors; but during the night, when they are kept closed, great precautions must be used. The trooper knows that a hot

stable will save him a great deal of trouble by producing a fine coat without much labor, and many a lazy fellow has stealthily shut the ventilators that were ordered to be left open; such a man deserves severe punishment. Generally speaking, the ventilators on the lee side should not be closed, and in warm weather all should be open. Let it be remembered that cold pure air never yet killed a horse, but hot impure air has destroyed thousands.

"The organism of the horse," says Haycock, "is of a most elaborate and complex character. A variety of functions are performed within its interior. One of the most important of these functions is that of respiration, upon the due performance of which the natural temperature of the body mainly depends. Through the medium of the lungs, oxygen is passed into the blood; this element is carried and diffused through the entire body of the animal. The action of the oxygen is twofold; it purifies the blood in the lungs, and by so doing renders the fluid in a fit state to supply the waste which is produced within the animal, by what is denominated the process of internal combustion. As the blood, however, is imbibed by the various tissues in its transit through the body, a portion of oxygen is again liberated; the direct action of which is to cause another series of effects. It acts immediately upon the old, effete materials of this complex apparatus; new compounds are formed, and it is during the formation of these new compounds that heat is generated. Chemical action and heat are inseparable. It would appear, in fact, as though the former expended itself and became ultimately resolved into the latter.

In addition, however, to the production of heat from the action of oxygen upon the waste materials of the organism, the same process goes on between the oxygen and certain constituents of the food, which principally consists of carbon, sugar, gum, starch, and fat, and which, either separately or in combi-

nation, are always to be found in the food of the horse. The quantity of these materials consumed by oxygen in the manner stated, varies to a considerable extent. If the food be rich and abundant, and the work of the animal disproportionately low, the carbonaceous elements not consumed are deposited; or, in other words, the animal becomes what is designated fat. When, however, the food is poor, or in quantity not too abundant for the labor performed, the constituents named are for the most part consumed, in addition to the waste substance of the body.

Food, then, to be thoroughly suitable to the animal, must possess a twofold capability. It must contain elements to supply the waste of the body generally, that is, the waste of such structures as muscle, brain, bone, skin, and other textures which enter into the formation of the animal; and it must also contain carbonaceous elements, or elements capable of uniting with oxygen so that heat may be generated and the temperature of the organism maintained. The food usually given to the horse possesses this double capability; hence we at once perceive that it should fulfil this twofold condition. In addition, it may be remarked, that food for horses should at all times be of the best quality, and the animal continually live in a pure atmosphere. If the food be not good, neither will the various structures composing the body be sound or good; while, if the animal be kept in a vitiated atmosphere, as, for instance, in a badly ventilated stable, blood cannot be made of the required purity, nor can the animal heat be generated so well or so vigorously as desirable. Pure food, supplied in abundance, implies purity and abundance of blood; and as a general physiological truth, such purity and abundance of blood may be held to promote the great desiderata, viz., increased vital power, and additional physical vigor to the horse."

The average daily quantity of food deemed sufficient to support the energies of the cavalry horse is twelve pounds of hay and

ten pounds of oats. In the United States' service this quantity is even increased to fourteen pounds of hay and twelve pounds of oats, corn, or barley, which is enough for the largest horses of heavy cavalry. Each ration is usually divided into three feeds, one of which is given in the morning, one at mid-day, and one in the evening. Bran is sometimes substituted for oats and mixed with water, to form a mash; it acts as a mild laxative, and tends to prevent fever and costiveness. In winter, bran is usually given to cavalry horses once a week, but in hot weather it will be found advisable to give it oftener; from its laxative properties and easiness of digestion, it is one of the best, and at the same time one of the safest remedies, as an alterative, that the veterinarian or owner can administer. For the infirmary stables it is indispensable; and no horse can with safety be physicked, unless he has been fed at least twenty-four hours upon it. Made into hot mashes and applied at night in a pail, so as to steam the head of the patient, it is an excellent cure for catarrhs and coughs. Very few horses, though unfitted for hard work when fed entirely upon it, lose their flesh or appearance. In all diseases of the digestive organs, hide-bound, fevers, &c., it is invaluable, and without a substitute.

The properties of oats are generally so well understood that little comment is needed. They should be about a year old, and weigh from forty to forty-two pounds per bushel. New oats are heavier than old ones, owing to the presence of watery matter, which gradually evaporates. New oats are not as easily masticated as the old; they form a mere glutinous pulp, which it is difficult to digest, and when eaten in considerable quantities is apt to occasion colic. Old oats, on the contrary, when chewed, become a smooth and uniform mass, which readily dissolves in the stomach, and yields all the nourishment which they contain. Good oats may be distinguished by their thinness of husk, their dryness, freedom from dust, and sweet-

ness of smell. Bad oats are injurious in many ways; they cause diabetes, unsoundness of wind, and general debility. They are known by their lightness and dulness of color, a peculiar, soft, damp feel, and a musty smell. Oats that are kept in large quantities should be turned over at least twice a week, or they will ferment and become unwholesome. The neglect of this has caused many to become unfit for use, which were perfectly good when first stored.

Hay stands in much the same relation to the horse that bread does to the human species. It is considered to be in its greatest perfection when about twelve months old. The horse, perhaps, would prefer it younger, but it is neither so wholesome nor so nutritious, and often has a purgative quality. When the hay is good, its color is bright, it is free from dust, and has a fragrant odor. Bad hay is soft to the feel, dull in color, smells fusty or mouldy, and readily breaks in the straw. It is frequently spoiled by being mow-burned, that is, when not having been sufficiently dried before stacking, it becomes charred by the excessive heat generated within the mass. This charring varies from a slight tinge to an almost black color. When slightly charred, the hay is, perhaps, none the worse; but when much burned, it is not only worthless as food, but even highly injurious. The horse soon shows its effects upon him. His thirst grows excessive, his strength is wasted, and he becomes affected with chronic cough, broken wind, diabetes, and general disease of the digestive organs. It is well, occasionally, to sprinkle the hay with water in which salt has been dissolved. It is decidedly more palatable to the animal, for he will leave the best unsalted hay for that of inferior quality that has been moistened with brine; and there can be no doubt that the salt very materially assists the process of digestion. The best way of applying the salt is to sprinkle it over the successive layers as the rick is formed, for it thus becomes more thoroughly

incorporated with the hay. The only objection to this method is that it diminishes the glossiness of the hay; but this is of little consequence, provided the cause of it can be ascertained.

Great benefit may be derived from the use of green food in summer, for a time not exceeding eight or ten days. It acts gently upon the bowels and kidneys, prevents the necessity of medicine without materially altering the condition, removes swollen legs, cracked heels, hide-bound, &c. Horses should not work while eating such food; but as troops are at all times liable to be called out upon exigent and unforeseen duties, it is prudent to subject only a certain portion of their horses at a time to this treatment, leaving the remainder fit for service. An occasional change of diet will prove beneficial. Carrots may be given with excellent effect. "The virtues of this root," says Youatt, "are not sufficiently known, whether as contributing to the strength and endurance of the sound horse, or the rapid recovery of the sick one. To the healthy horse they should be given sliced in his chaff. Half a bushel will be a fair daily allowance. There is little provender of which the horse is fonder." When first given, they are slightly diuretic and laxative; but as the horse becomes accustomed to them, these effects cease. They are a good substitute for grass, and an excellent alterative for horses out of condition. They are beneficial in all chronic diseases connected with breeding, and have a marked influence upon chronic cough and broken wind. They are serviceable in diseases of the skin, and in combination with oats restore a worn horse much sooner than oats alone.

Water is as essential to the health of the body as oxygen is to that of the blood. Of all the articles of diet enumerated as necessary to a horse, perhaps the most important is water. Without a sufficient quantity, the animal cannot be kept in a sound state. He will be dull, lose flesh rapidly, and become incapable of feeding. Particular attention, therefore, should

be paid to the watering of troop horses, as it frequently happens that an indolent or careless man will not give his horse enough, if he has some distance to carry it. Pure soft water, such as pool or rain water, is best. Spasmodic colic sometimes arises from giving that which has just been taken from the well or pump. Instinct or experience has made even the horse himself conscious of this, for he will not drink hard water if he can procure soft, and will leave the most transparent and purest well water for a river, although the stream may be turbid; even for the muddiest pool. He is injured, however, not so much by the hardness of well water as by its coldness, particularly in summer, when it is many degrees below the temperature of the atmosphere. But as the water in the brook or pond has been warmed by long exposure to the air, and has also become soft, the horse drinks freely of it without danger. No better test of the comparative softness or hardness of water can be applied than soap. Hard water curdles it, but with soft it readily combines without flakes or precipitate of any kind.

As a general rule, the quantity of water necessary for a horse is as much as he will drink, but it is not at all times prudent to allow this. Horses perspiring much from severe labor in the hot sun, would, if unchecked, frequently drink an injurious quantity. When about to be used for hard work, very little should be given to them for some hours before being mounted, for with a belly full of water they perspire profusely, breathe heavily, and are very apt to purge a good deal. Again, when the work is over, they should not immediately be allowed to drink their fill, else serious consequences would probably ensue. Indeed, horses returning to the stables in a state of perspiration, or exhausted by severe labor of any kind, should not for some time be allowed their regular quantity of water. A mere mouthful or two, however, after they have rested awhile, may prove beneficial. As a general rule, they should

not drink large quantities of water in the morning or during the actual time of work; but when their labor is finished, and they are entirely cool and free from excitement, let them have as much as they please. Horses that have taken their fill of water at night seldom require much in the morning, and in such cases small quantities may be given frequently during the day with advantage. It is only when they have been kept for a long time without drinking, and have been hard at work in the hot sun, or when perspiring excessively, or immediately after feeding, that large quantities may be hurtful to them.

Many persons imagine that the object of grooming is merely to clean the horse and give him a fine coat; but its other effects are much more beneficial, for it produces circulation of the blood in the skin and extremities, and also a certain amount of exercise. When the weather permits a horse to be taken out, he should never be groomed in the stable. Without dwelling on the uncleanliness of allowing the scurf and dust that are brushed from the horse to lodge in his manger and mingle with his food, experience teaches that if the cold is not too great, the animal is braced and invigorated to a degree unattainable in the stable, by being dressed in the open air. There is no occasion, however, for all the hard rubbing and scraping which some habitually inflict upon their horses, and which injures rather than benefits, especially where the skin is thin and sensitive. The curry comb should at all times be lightly applied, and with many horses should never be used at all. Even the brush need not be so hard, nor the points of bristles so irregular as they often are. A soft brush, with a little more pressure of the hand, will be equally effectual, and vastly more pleasant to the horse.

Some officers require almost as fine a coat on the horses in winter as in summer. The right or wrong of this we will not stop to investigate; but whenever it is demanded, justice dic-

tates that the same means that are used in private stables should be furnished to the cavalry also. It is a well known fact, that in every regiment there are many horses that have coats in winter of such thickness and length, that the most laborious grooming will not make them look well; the slightest exercise causes them to sweat profusely, and it takes hours of grooming to dry them. Such horses are always low in condition; but, what is of more consequence, they break down the spirits of the men who have charge of them, and moreover are an eye-sore to the regiment. In these cases, a judicious use of the singeing lamp would be highly advisable, for the horse would be benefitted by its application, and the men would be saved a great deal of most wearisome toil. After all, it is no slight task to dress a horse well. It occupies much time, and requires great patience as well as dexterity. It may be readily ascertained whether a horse has been well groomed, by rubbing him with one of the fingers; a greasy stain will expose the idleness of his attendants. When, however, the horse is changing his coat, both the curry comb and the brush should be used as sparingly as possible. "Whoever would be convinced of the benefit of friction to the horse's skin," says Youatt, "and to the horse generally, needs only to observe the effects produced by well hand-rubbing the legs of a tired horse. While every enlargement subsides, and the painful stiffness disappears, and the legs attain their natural warmth and become fine, the animal is evidently and rapidly reviving; he attacks his food with appetite, and then quietly lies down to rest."

If it is impossible to prescribe any general rules to regulate the construction of private stables, on account of special circumstances, such as situation, required size, means of the proprietor, &c., there is no such difficulty respecting the building of barrack stables, since there is usually plenty of ground and means for the erection of any description of building that

may be needed. The most important calculation to be made is the number of horses to be accommodated; the next considerations are the shape of the building, the number of horses each stable should contain, and a prudent attention to ventilation. Experience proves that the most sheltered stables are the most healthy; that is, those most sheltered from high winds and excessive currents of air; but so constructed as to allow a pure and free ventilation, provided the situation be not low nor swampy.

When stables are intended for the reception of small, detached parties, their site, shape, and arrangement will necessarily be controlled by the situation, locality, and other such circumstances; but when ground is to be laid out for buildings to accommodate whole regiments, or even squadrons, then the great consideration is, what plan most effectually secures convenience and utility, and likewise most largely promotes the health of the horses to be stabled in them. As we have already stated, buildings exposed to strong currents of air are objectionable, and those which are most sheltered are the most healthy. Where there is no natural or artificial protection, the best shape for cavalry stables is that of a square or squares, so that, from whatever quarter the wind may blow, one side will always serve as a barrier against it, and in a great measure shield the other sides from its violence, thus screening the horses during exercise or parade within its area.

The size of the stables is a subject requiring very careful consideration, and yet how little thought is generally bestowed upon it. Small stables, like small rooms, are always very hot or very cold; and, generally speaking, all attempts at ventilation produce in them direct draughts or injurious currents of air. Cavalry stables ought to be large enough to contain at least twenty horses each. For this purpose they should be so wide as to allow the racks and mangers to be attached to the walls

on either side, with a clear space in the centre of the building, large enough to prevent the horses from reining back upon each other. In a long range, the several stables should have doorways between them, as a means both of free circulation of air in warm weather, and also of easy communication at all times. Too many entrances should be avoided; two, one at either side, suffice for ingress and egress, and at the same time are very efficient ventilators. The doors and windows should be so arranged that in the summer time they may be left open. The doors should be divided horizontally, that the upper half may remain open for the admission of light and air, and the lower half, being closed, may prevent the escape of any horse that has chanced to slip his halter.

The racks and posts should be of iron; the mangers of iron or stone. The stalls should be not much less than ten feet long and five wide, separated by swinging planks so suspended as to be easily lowered, whenever occasion may require. The ceiling should be from twelve to fifteen feet high, and the capacity of the stables so calculated as to allow one thousand cubic feet per horse. In every stable a corner stall should be partitioned off and appropriated to the daily rations of hay and oats, as great waste is often incurred by placing them in an empty stall, or exposing them to the weather. It will also save much litter if there is a passage in the centre wide enough to stack it in, on rainy and inclement days. Particular care should be given to the drainage of the stalls, but with no greater inclination than will easily shed the water. Too great a slope throws an injurious strain upon the tendons of the horse's hind extremities, causing sprains, spavins, windgalls, &c.; an inclination of four inches from the head of the stall to the gutter or drain at the foot will answer every purpose. To prevent an accumulation of urine, fæces, and other offensive matter in the pavement of the stalls, the stones should be laid

o as to form as flat a surface as possible; and impervious ement should be used between them. Metal gutters in the entre of each stall, discharging into trapped drains, have been ecommended as conducing greatly to the health of the horses nd as saving the straw. The flooring formed of small cob-le stones, still often used, cannot be too severely condemned, s it absorbs the urine, which thus saturates the sub-surface, nd causes a generation of the most deleterious gases. More-ver, such flooring is constantly out of repair. The hospital tables should in all cases be separated from the others.

The French have adopted an arrangement of cavalry quar-ers combining barracks for the men with stalls for the horses nder the same roof. The horses are on the ground floor, vhich has a ceiling fifteen feet high, above which, in the econd story, are accommodations for the men, the floor being leafened and made airtight by hollow bricks laid in mortar. At first thought, quarters over stables would seem unsuitable or permanent occupancy by large bodies of men, but experi-nce has proven the contrary, while it is no small advantage o have the soldier always very near his horse, and lodging lose by him.

This plan has met with general favor, and is now almost verywhere adopted in Europe. "With the exception of Prus-ia," says Colonel Delafield, "the practice of the great military owers of the Continent corresponds with the French. Russia as but recently constructed large cavalry depots on this gen-ral principle. France and Russia confine the buildings to two nd three stories, while Austria has found it most convenient, n some structures of this kind now building in Vienna, to put third and fourth story above the stable floor. The excellence nd utility of the system depend greatly on the details of con-truction. It is indispensable to have the floors airtight, that one of the fumes of the stable can rise through them. For

this purpose a deafening is laid between the floor timbers in some cases. In others, the floors are supported by wrought iron beams, the spaces between being filled with small brick arches, the brick being made like a honeycomb or cellular, to reduce the weight and guard against moisture, as well as being better non-conductors of sound and heat. This description of flooring, covered with board or tile, is very satisfactory, and in very general use in the new buildings of Paris, as well as other Continental cities."

More horses are injured by idleness and rest than by labor and fatigue. A well-fed animal should be exercised at least two hours every day, if he is to be kept free from disease. A horse so treated will perform his task, and sometimes a severe one, with ease and spirit, while the idle and neglected one will be weary before half his work is accomplished; and if he is pushed a little too far, dangerous inflammation will ensue. It is a hurtful, though common practice, when infantry is sent to camp for instruction, to leave cavalry cantoned in the neighborhood or stalled in snug stables, and thus, while the men become hardened by exposure, the horses are enfeebled by over-nursing. "The encampment at Chobham, in 1853," says Beamish, "when the horses were merely hutted, and the weather, for a great part of the time, extremely wet, showed that horses, when well fed, can bear great changes of temperature and treatment without injury. The casualties among the cavalry horses on that occasion were not, as might have been expected, caused by inflammatory attacks, but from accidents, kicks, injuries from the picket poles, &c.; and when we consider the sufferings of horses in transports, the crowding and fetid air to which they are exposed, and their rapidly restored efficiency, it must be concluded that the horse is capable of much greater endurance than is commonly supposed. Horses, generally speaking, suffer much more from hot stables, high

feeding, and want of exercise, than from exposure to weather; and more roughing it in summer encampments would render our cavalry better able to bear the real hardships of actual service."

On bivouacs it is not always possible to procure proper food for the horses, and often we must provide as we best can. If we have the choice, it is better to use green food than new hay; the ripest grass is the best. If there is nothing but clover, it should be given very sparingly. During the Russian campaign, on the banks of the Niemen, in a single night the French cavalry lost over one thousand horses that had eaten too freely of it. Lucern and sainfoin are as injurious as clover. If they have time to wilt, however, there is less danger, and after being cut for a day, they seldom do any harm. For want of grass, leaves may be used; those of the elm are the best. In rainy weather the grass should be placed under cover or piled up in heaps, and that which is dry should be eaten first. If nothing but new hay can be procured, the driest and the best aired is to be preferred; give little, however, and, if possible, first moisten it with brine. The oats found among the farmers are generally new; feed but little at a time. Next to oats, corn and barley are the best. Wheat is apt to cause colic. Beans, pease, and the like may be advantageously used, crushed, if possible, or soaked in water for a few hours. As a general rule, when a horse receives food to which he is unaccustomed, however he may relish it, always supply it sparingly at first; else colic or disease of a more violent nature may ensue. In no case allow water until the food is perfectly digested. Water does not remain in the stomach; it immediately passes into the cœcum, whence it supplies the wants of the system. When horses are fed before drinking, and water is copiously allowed immediately afterward, in passing through the stomach, it takes along with it a considerable quantity of imperfectly

digested matter, which the delicate surface of the small intestines is not prepared to receive, and irritation of the bowels supervenes, often followed by inflammation and death.

"Be very fastidious in choosing water for your horses in bivouac," say the Arabs.

"In winter, water them only once a day, at one or two o'clock in the afternoon, and give them barley at sunset. It is a good habit in war, and the means, moreover, of rendering their flesh firm and solid.

"In summer, water twice a day, early in the morning, and in the evening after sundown.

"Water in the morning makes the horse lose flesh; watering at noon keeps him as he is; watering at night builds him up in flesh.

"Never let your horse drink immediately after great exertion lest his perspiration be checked; but if by rapid travel your horse is wet with perspiration, and you meet a brook, do not fear to let him swallow five or six mouthfuls over his bridle; it will not hurt him if you move on, but rather enable him to continue his course with renewed vigor.

"Always after excessive fatigue, let your horse drink with the bridle and eat with the saddle on, and he will grow old in your service.

"Beware of great heat, but even more of great cold, especially on a summer's night; for the cold of summer is worse than the steel of your enemy's sword.

"In hot weather always wash your horse, if possible, both in the morning and at night.

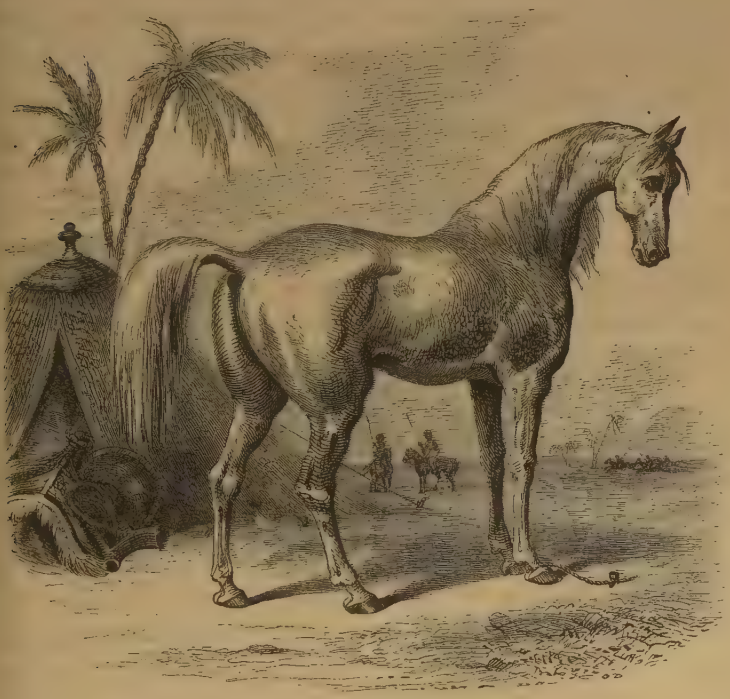
"After a long day's work, either at once unsaddle your horse and wash his back with cold water, while walking him until he cools, or leave the saddle on until he is perfectly dry and has eaten his barley. But pursue no middle way; let it be the one or the other.

"When, after a long march in winter, through rain, snow, and slush, you finally reach your tent, cover your horse up snugly, give him his barley slightly parched, and allow him very little or no water on that day.

"For your bivouac select a dry situation, sheltered from draughts; keep your horse free from dirt, dung, and urine, and so place him that he may stand higher in front than rear. The contrary would be sure ruin to his shoulders.

"On alighting where you intend to pass the night, the first thing to be done is to hobble your horse, for so will he be safe."

Fig. 92.



The Arabs account it utterly preposterous to tie the horse by the head, and affirm that it makes him vicious and leads to

accident. In fact, with the hobble, the horses, when lying down to sleep, stretch out their necks at full length like a greyhound basking in the sun, and never are known to break loose from the picket rope and run through the bivouac. The French cavalry in Algeria were so favorably impressed with the Arab method, that they all now follow it, only instead of fastening each horse by a picket pin, they use a rope twenty or twenty-five yards long, which is stretched on the ground, and held in its place by four pins, one at each end, the others at equal distances between, and to this each horse is secured by a hobble on the right fore foot. The hobble is of leather, about three feet long, and is buckled round the pastern joint. The Arab hobbles are made of horse-hair mixed with camel's hair, and in wet weather are, perhaps, preferable to the leathern ones, as they do not become stiff through moisture, and retain no dirt; only where they bind the pastern they should be lined with cloth or other soft material, to prevent chafing and the causing of wounds which cannot easily be healed on a march.

One of the worst accidents that can befall a horse on the march, is the loss of a shoe. In deep and heavy ground perhaps it cannot always be prevented; but on the beaten roads it is wholly the rider's fault, and a recurrence of such carelessness should be severely punished in him. Every morning, when the feet are picked out, it is easy to examine the shoes and ascertain whether they are tight. The clenches also should be examined, and if they are not raised at all, it may be confidently expected that the day's journey will be completed without the loss of a shoe. Moreover, a raised clench may seriously wound a horse on the inside of the other leg, and where there is a predisposition to cut, it may inflict severe injury, and perhaps occasion a very dangerous fall.

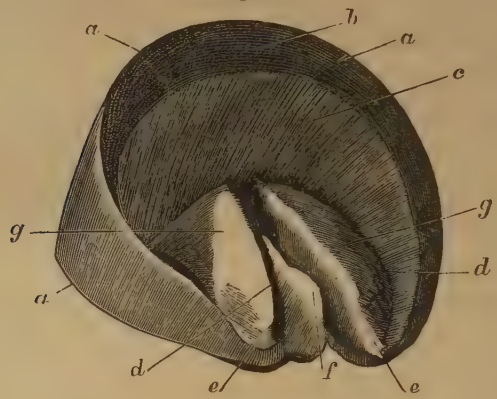
There are few matters connected with the management of cavalry of greater importance than the art of shoeing horses.

Bad feeding, bad ventilation, and the like, may all continue for a time with comparative impunity, but a horse not well shod is speedily crippled, and consequently useless for service. Some persons, considering the horse in his wild state, urge that, as nature does not provide such protection, in most cases the hoof, if left to itself, would be much stronger and healthier than when shielded with what they call an unyielding bar of iron. In this, however, they err: the horse, when wild, takes care of himself only; he has not to carry a man and his equipments, weighing two or three hundred pounds, over hard, rough, and uneven ground, day after day, often at a rapid pace. Certainly, nature does not employ a farrier for the especial benefit of the animal when undomesticated and breathing the pure air of his native fields; neither does she provide a fashionable boot-maker for the savages of the South Sea Islands. But those gentlemen, though not suffering from corns, have other troubles arising from want of protection, and from which the civilized man is free. And so it is with the wild horse, which, for aught we know, may suffer as much from sprains, spavins, and curbs, as horses do that are domesticated.

On carefully examining the horse's foot, we find that the bones which support the softer tissues that compose the limbs, are so placed as to afford the greatest amount of resistance to those violent shocks and concussions to which every limb is necessarily subject. They are placed in mediate contact with each other, and are retained at varying angles by ligaments and tendons of the greatest tenacity and strength; while the more delicate and sensitive structures of the foot are enclosed and protected by a mass of horn to which the skilful smith can affix a well moulded shoe of iron, thereby additionally shielding the tissues within, and more fully adapting the animal to its various duties and labors. This horny mass is shown in Figure 93, which represents a hoof from which the internal structures

have been separated: *a*, *a*, *a* is the horny crust; *b* the coronary concavity, studded with minute pores, which are the commencement of the horn tubes, of which the hoof is mainly composed; *c* shows the horny plates or horny laminæ of the hoof; *d*, *d* the bars of the foot; *e*, *e* the frog; *g*, *g* the inner surface of the sole; and *f* the cleft of the frog. The external form of the hoof is too well known to need any minute description here; only it should be observed that it is more convex upon its outer than upon its inner side, and we may add, that the outer half contains a greater thickness of horn.

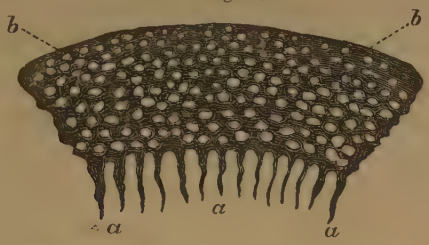
Fig. 93.




Those ignorant of the structure of the hoof would naturally suppose it to be a solid mass of horn; an examination of it, however, with a common magnifying lens, will at once correct this error. The transverse section of the hoof, magnified only six diameters, will appear as in Figure 94, in which *a*, *a*, *a* are the horny laminæ, and *b*, *b* the horn tubes which exist in immense numbers, and traverse side by side the entire depth of the horny mass. Thus, strange as it may appear, the animal stands and travels upon thousands of cylinders, all arranged

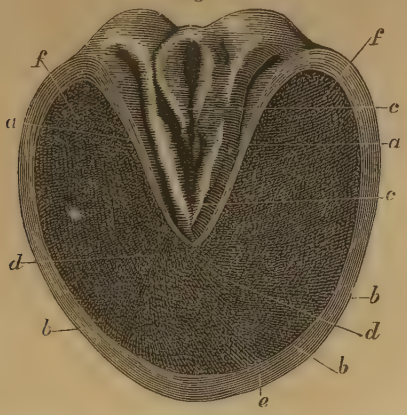
with nicest regularity, and held together by a glutinous medium, that constitutes, in a great measure, the peculiar pigment which colors the hoof.

Fig. 94.




Attached to the lower border of the crust is the sole, which, like the hoof, consists also of cylinders, as may be readily ascertained by raising the foot of a horse and cleansing the sole; when with the aid of a common pocket magnifier we may perceive the countless pores of which the sole is composed. Figure 95 shows the ground surface of a right fore foot, in which *a*, *a* are the bars; *b*, *b*, *b* the crust, in close contact with *d*, *d*, the sole; *c*, *c* the frog; *e* the toe; and *f*, *f* the corners of the heels; it is here that corns are formed.

Fig. 95.




A horse, regularly at work upon hard roads, requires a set of new shoes every four or five weeks, and a replacement of

the old ones probably once meanwhile, according to the growth of the hoof. The farrier ought to know the usual rate of growth of every horse's hoof in his squadron, whereby he would understand the strength of every hoof, and its ordinary capabilities of resistance. He thus would also be able to calculate the exact amount of horn that he could remove without injury. The evils resulting from over-paring and over-rasping are incalculable. It is plain that if the feet are cut and rasped injudiciously, and if more matter is removed than is restored during the intervals of shoeing, the animal must soon become useless, from the want of protection to the sensitive structures within the hoof. Yet this is the common practice of three fourths of the farriers, if you let them have their own way. Hoofs of the best class, and those which grow most vigorously, produce little more than five sixteenths of an inch of horn per month; while bad hoofs, or others that are thin, weak, and low at heels and quarters, do not reproduce the material even as rapidly as this. All that the farrier should remove are the loose cakes of horn attached to the sole, and this is especially necessary in order to bed the shoe carefully to the rim of the foot. A single cut with the drawing knife beyond this is productive of more or less injury. The frog, unless diseased, should never be cut; the functions of the organ being of too important a character to be interfered with by ignorant or bungling attempts to improve upon its natural formation.

The injuries that result from the excessive use of the rasp are of a different kind and somewhat less dangerous than those inflicted with the drawing knife, though many a valuable horse has been spoiled by it for life. The hoof contains within its horny substance a certain amount of latent moisture which keeps the organ strong and tough, and any agency productive of a more than ordinary evaporation from its surface, tends surely to render it dry and brittle. To prevent this, nature has so con-

stituted the foot that it secretes a peculiar substance which is spread abundantly over the external surface of the crust. This substance consists principally of silex or flint, and is, in fact, a coating of flint which dries and hardens, thus preventing undue evaporation as well as protecting the hoof from the heat of the sun. Rasping off this coating is, therefore, evidently subverting the purposes of nature. The only rasping necessary, and which may be done without injury, is toward the lower part of the hoof where the nails are clenched, and thence down to the border of the foot which rests upon the shoe; the toe also may be rasped in order to shorten it. Any other rasping is injurious; and even this must be done with great care and judgment.

"Fitting the shoe," says Miles, "means fitting the shoe to the foot, and not fitting the foot to the shoe, as is too often done in many forges." The importance of having the shoe dished or made concave upon its foot surface, will be apparent if we reflect upon the facts already detailed respecting the structure of the hoof. The sole of a properly formed hoof being concave or vaulted, the weight of the animal has to be supported entirely by the crust, and to this crust the shoe must necessarily be attached. The proper form of the foot surface of a shoe may be seen in Figure 96, in which *a*, *a*, *a* represents the bearing surface, and *b*, *b*, *b* the dished or concave part. The fore-foot shoe, however, should not be too concave, nor dished more than to allow a picker to be passed freely around between it and the sole. More than ordinary care should be taken to prevent the shoe from pressing upon the quarters and corners of the heels, because it is at these parts that undue pressure is to be dreaded, and is so frequently the cause of lameness. Horses with flat feet, whose shoes are not dished enough, will generally be found to have corns within the heels and bruises upon the soles of the feet.

From time immemorial it has been considered necessary to use eight nails to fasten a shoe securely to the foot; but this practice, like many others, whose chief authority is their antiquity, is found by experience to be generally unnecessary.

Fig 96.

Five is the number which Miles considers amply sufficient to retain each shoe firmly in its place. "The soundness of a horse's foot," he says, "so far as shoeing is concerned, depends more upon the number of nails, and where they are placed, than upon anything else; for, if the shoe is ever so badly formed, and the nail holes rightly placed, very little harm will happen to the foot beyond the loss of a shoe; but if a shoe is of the best possible shape, and fitted to the foot in the most perfect manner, unless the nail holes are placed so that the foot can expand, it must in the end become unsound. The portions of the hoof that expand the most are the inner quarters and heel; you must, therefore, leave those parts free from nails; and the way to do it is never to stamp more than two holes on the inside of the shoe, one about an inch and a quarter from the centre of the toe, and the other about three quarters of an inch behind it. It is quite clear that if you nail both sides of a horse's hoof to an iron shoe, the hoof will be held fast and cannot expand; and when the horse's weight forces the bones of

the foot into the hoof, the tender lining of the hoof will be squeezed against the shanks of the nails, and cause pain to the horse at every step he takes. The whole number of the nail holes should never exceed five: three on the outside and two on the inside." Figure 97 shows the ground surface of a near fore foot with the shoe fastened on with five nails, and its appearance when properly fitted to the horse.

Fig. 97.

The expansion of the hoof, on which the above method is based, is, however, with many a matter of doubt. Numbers of veterinary surgeons deny it altogether; others, on the contrary, strenuously affirm it. Perhaps both are right and both wrong. The truth probably is, that the feet of young horses and of those which have not been severely taxed with labor, do expand; and that the feet of aged horses and of those for a long time engaged in severe labor do not. If this be so, an additional nail or two will not impair the healthy condition of the feet of horses that are accustomed to hard work.

"The hind shoe, like the fore shoe," says Miles, "should be brought in at the heels, and be made to follow the exact shape of the hoof; but as the weight of the horse falls differently on the hind feet to what it does on the fore feet, and as the rider often obliges the horse to stop suddenly and without warning,

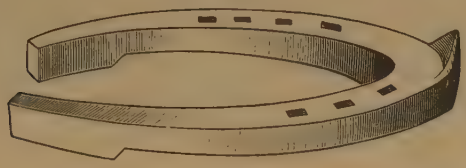
when he is least prepared to do so, it becomes necessary to guard against strains of the hough and sinews, by raising the heels of the shoe; but this should be done in such a manner as will give both heels an even bearing on the ground. Calkins may be useful to heavy draught horses, but they are objectionable for riding horses; and turning down the outside heels alone should never be done. The best plan is to have the last inch and a half forged thicker than any other part of the shoe; the heels are then made red hot, and the shoe is put in the vice with the red-hot heels projecting, which are beaten down with a hammer until they are about an inch long, and then the sides are made even, and the foot and ground surfaces level on the anvil.

The toe of the hind shoe is exposed to great wear, and should be made stout and thick, and rather pointed, with a small clip in the middle, to prevent the shoe from being driven backward; and the back edge of the web should be rounded off to guard against overreach. The toe should rest fairly on the ground, to enable the horse to get a good purchase for throwing his weight forward. It is a bad plan to make the toe broad, and to place clips at the side of it. The hind foot expands less than the fore foot, still, you should place the nail holes so as not to confine the foot. Three nails on each side are generally found sufficient to hold a hind shoe firmly to the foot. The holes on the inside should be stamped closer together than those on the outside, and they should be placed forward toward the toe, so as to leave the inside quarter and heel free to expand. A small foot may be shod with three nails on the outside and two on the inside; but no foot can ever require more than seven altogether." Figure 98 shows a near hind shoe when the foot is so large as to require seven nail holes.

The above remarks upon horseshoeing, taken principally from the works of Youatt, Haycock, Miles, and the "Cours de

Maréchalerie de l'école de Saumur," while giving some general principles, are especially intended to show the immense importance, for a regiment of cavalry, of having good farriers. In France, where all these matters are systematically attended to, there is attached to the establishment at Saumur a school for farriers, in which private cavalry soldiers, who have

Fig. 98.



served at least six months, and are blacksmiths or horseshoers by trade, are admitted. The course extends through two years, and comprises equitation, the anatomy of the horse, something of the veterinary art, and thorough instruction respecting all diseases, injuries, and deformities of the foot, the selection of metals, making shoes, nails, tools, and all that belongs to the art of horseshoeing in general. "In the regiments," says General McClellan, "each farrier has a register, at the head of each page of which are inscribed the name and number of a horse; below are traced the impressions of his fore and hind feet, which can always be reproduced by means of the podometer or a paper form. Any necessary remarks as to peculiarities of the horse's feet, and directions for shoeing him, are inscribed by the veterinary. A note is made in the register every time the horse is shod. By means of this register the farrier prepares, at his leisure, four shoes for each horse, which number should always be on hand; the veterinary inspects them, sees the nail holes punched, and has them marked with the number of the horse. On the march, every man must be provided with four shoes thus fitted, also with two sets of nails."

In the middle ages, when the art of protecting the horse's feet was first invented, the blacksmith was horse doctor also, and in many quarters is so yet, just as in some remote rural districts the village barber is the village surgeon too, in regard to all minor operations on the human body. Veterinary surgery, which, among the ancients, was cultivated to a certain extent, was, if we except Spain, almost entirely unknown in Europe; the practice of it was left to slaves and the meanest and most ignorant farm hands. In Sweden the people looked upon it as infamous; and such is the force of prejudice, that even at the present day it is still an object of contempt with many. There is no satisfactory reason, however, why the veterinarian should occupy a lower social position than any other physician. Indeed, the medical treatment of man seems less complex and less difficult of application, since it deals with only one kind of beings, endowed with the power of explaining their pains and discomforts in language; whereas among irrational animals, little can be known except from symptoms; and although the absence of moral affections and the regularity of diet greatly simplify their maladies, yet, in many cases, it is exceedingly embarrassing to determine the seat and nature of the morbid affections.

But the veterinary art, after having been long despised, now begins to take rank among the most useful professions, thanks to the enlightened efforts of some governments, which have established schools for veterinary surgery, in all respects equal to other medical colleges, and similarly organized, with a regular faculty, a prescribed course, diplomas for graduates, &c. The importance of the results can hardly be overrated if we consider how much less frequent and fatal murrain and pestilence among animals have become during the last half century; and it seems only just that men whose studies and knowledge have conferred such valuable benefits upon the community,

should participate in the usual honors granted to merit. And this applies particularly to veterinary surgeons in the army, who, in most countries, still rank with non-commissioned officers, while the other surgeons, though often inferior in knowledge and skill, rank with the officers. Veterinary surgery will never fulfil the requirements of agriculture, commerce, and the army, until the profession be assimilated to that of human surgery, and until, in cavalry regiments, the veterinarian shall be no longer associated with the master tailor and bootmaker, but allowed the same privileges as officers.

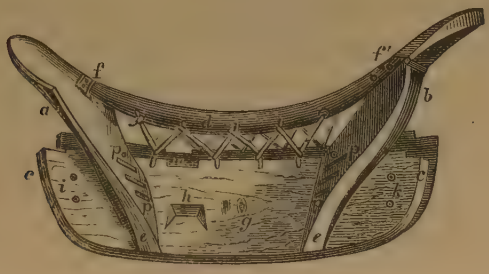
The infantry soldier carries all his equipments upon his person; with the exception of his arms, the cavalry soldier places everything needed for himself and horse upon the saddle; not because the weight thus becomes lighter for the horse, but because distributed on a larger surface, and snugly stowed away, it is easier for him to bear, and leaves his rider a freer use of his arms in combat. The requisites of a good saddle are the greatest lightness combined with the greatest solidity, a perfect fit to the horse's back, a firm and easy seat for the rider, and proper accommodation for the equipments, so as to allow their equal distribution in respect both of bulk and weight. The great fault in military saddles is their excessive weight and bulkiness, which imperfections are not always redeemed by a corresponding solidity. The number of horses rendered useless by sore backs tells fearfully against their construction, while bad riding also is too often owing to the clumsy seat, which in many cases allows the man to stick to his horse, not by means of his saddle, but in spite of it. Now, if the rider cannot keep a steady seat, he will certainly wound his horse, however well the saddle may fit. A bad seat is, therefore, a second cause of that bane of cavalry, sore backs, which, again, are not seldom occasioned by an injudicious method, or, what is worse, a want of method, in packing the effects upon the saddle.

Great improvements have been recently made in all that relates to military harness, but however excellent the chosen models may be, so long as governments purchase, at the lowest bid of contractors, articles whose correctness of construction and fitness of material cannot always be ascertained, we need not wonder, if, after a short campaign, half of the cavalry of an army is sometimes rendered unavailing. Bad harness and bad shoeing have done far more damage to cavalry than the difficulty of maintaining them in the field. Farriers may be educated and watched, but it is a grievous thing for a commanding officer thus to be exposed to losses depending upon causes not under his control; and it is explicable only by the power of tradition and routine, that with such an interest at stake as the preservation of the vast number of horses required by the cavalry, artillery, and train of an army, there are yet governments which have not established their own saddle and harness factories, as well as their armories and founderies.

The saddle most in use among the light cavalry of Europe, is the Hungarian tree, whose general introduction may be accounted for by the numerous hussar regiments which at one time were gotten up everywhere in Hungarian fashion; and we regret to say that most of its original merit has been lost, owing to the gradual changes successively introduced with a view to improvement. The Austrians and Russians, however, have departed less than any other nation from its earliest form, and the saddle now in use among them, and represented in Figure 99, is thus described by General McClellan: "It is of hard wood, entirely uncovered, and consists of the bars *c*, the front fork *a*, the rear fork *b*, and the saddle seat or straining-strap *d*. The ends of the forks *e*, *e*, are let into mortises in the bars, and secured by raw-hide thongs passing through mortises *p*, *p*. The saddle seat, or straining leather, is a stout strap of leather from $11\frac{1}{2}$ to $13\frac{1}{2}$ inches long, $4\frac{1}{2}$ inches broad at the hind

fork, $3\frac{1}{2}$ to 4 in the middle, and $2\frac{1}{4}$ to 3 at the front fork. It is secured to the front fork by four flat-headed nails, a strip of leather being first laid over the end of the strap, as seen at *f*.

Fig. 99.




As the greatest strain comes upon its junction with the hind fork, it is secured to it differently. At each angle of the strap a stout thong is left when cutting it out; this thong is passed around the neck of the fork, and secured by a nail in rear; five flat-headed nails are then driven through the strap into the fork; under the head of each nail a round piece of leather is placed to prevent the strap from being cut or worn; *f'* shows this arrangement. The strap is attached to the bars by rawhide thongs, as shown in the figure. The forks are strengthened by light iron plates nailed to front of the front fork and rear of the hind fork. The girth is attached to the bars by thongs passing through the holes *g*. The stirrup leathers pass through the mortises *h*, and in the notch *m*, a groove being cut in the under surface of the bar to receive the leather. The holes *i*, are for the purpose of attaching the straps which secure the holsters; those at *k*, for attaching the crupper. Near the upper end of each fork is a mortise; that in the front fork to receive the cloak strap that in the rear fork to receive the valise strap. The girth is of leather, $3\frac{1}{2}$ inches broad, and fastened by a large buckle on the left side."

In Hungary the peasants use this wooden saddle on the

bare backs of their horses, and in the French service they have made experiments to the same effect. As long as the horses kept up their condition, it was found to answer very well, but on long marches and in difficult country, when the horses fell off in flesh, they were invariably wounded by the contact of the wooden edges with the bare ribs. To prevent this, a very ingenious saddle has been contrived by a cavalry officer in Belgium: it has movable bars, the front and hind forks working on an iron roller, that the bars may always assume a position parallel with the horse's back. This was so far an improvement; but as it was to the detriment of solidity, it was of no avail to the army.

For all these reasons, the Hungarian saddle is still everywhere used with some medium between it and the horse's back, generally a blanket, folded in twelve or sixteen thicknesses, or better, as the Russians have it, placed on a saddle-cloth of stout felt, four layers thick, which number is increased or diminished according to the condition of the horse. On the march, the seat is usually covered with some article of clothing, and the whole with a shabrack of heavy cloth and a lamb's skin with the wool outside. This saddle recommends itself by its cheapness and lightness, and is also solid enough, provided it be made on correct principles and of good materials; otherwise, as may be easily conceived, the working of the wood and the stretching of the leather parts, especially the thongs, greatly disturb the seat of the rider.

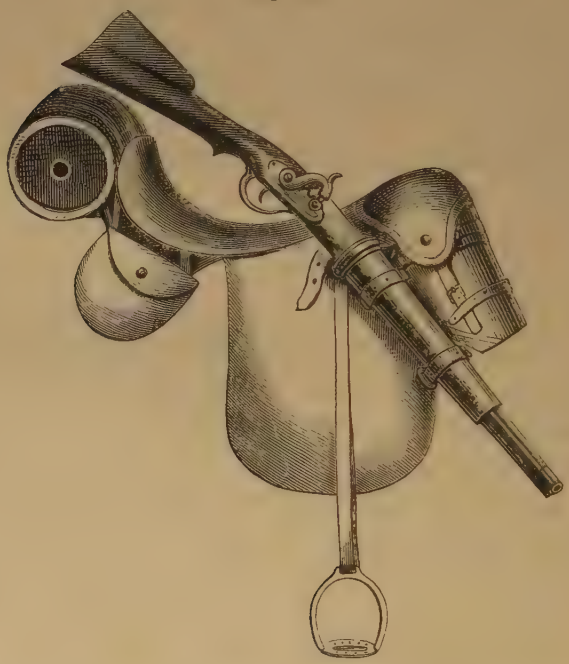
In some armies the seat is covered with padded and quilted leathern cushions; the pommel and cantel have been raised in some instances to an extraordinary height; and in course of time the saddle has been subject to so many new combinations and modifications, as to leave hardly a vestige of its original form. Unfortunately these modifications have not always been improvements. "The present hussar saddle," says Nolan,

"raises the man high off his horse, because the spread of the sideboards and the upright position of the forks require the wolf or seat to be high; for, if it is not high, then the sides of the boards raise up the thighs of the man, and prevent him from gripping his horse. The saddle is like a wedge between the man's legs, on which his body acts as a lever; thus, if he inclines or throws his weight on one side or the other, he moves the saddle bodily, and by doing this often, he naturally causes sore back. The Hungarian saddle is used either with a large blanket in twelve folds, or with pads stiffened with horse-hair. Now both these methods are faulty. The large blanket is, in the first place, very hot and oppressive, the sideboards, being of a polished surface, have no hold on the blanket, and thus it often works its way out from under the saddle. With pads, a free circulation of air is indeed obtained between the saddle and the horse's back; but as the condition of the horse varies, so does the position of the saddle; and as this cannot easily be rectified by means of the blanket, different expedients are resorted to, such as covering the sideboards with plaits of straw, or giving the blanket an extra fold, &c."

Indeed, there are grave objections to the use of blankets. In addition to their tendency to work out from under the sideboards on a march, they collect dirt and dust in the folds, are easily torn, require to be kept folded on service, and if dropped in the flurry of a surprise at night, cannot be refolded without assistance. For these reasons many officers prefer the panelled saddles, which, though more expensive, are much safer, and afford much better seats. The only danger is, that when they are made of inferior materials, their stuffing is liable to pack unevenly, to collect into knots, and then cause swellings and even wounds. Almost everywhere, however, the heavy cavalry use this description of saddle, and it is a noticeable fact that, notwithstanding its unnecessary weight and clumsy shape,

cuirassiers' horses on a long march suffer less from sore back than others. General Bacon gives the following remarkable instance of the superiority of the panelled over the Hungarian saddle, on an occasion when both were fairly tested in actual service: "In the year 1834, one hundred lancers and the same number of light cavalry were ordered upon a special duty to a distance of fifty miles in the rear of the enemy

Fig. 100.

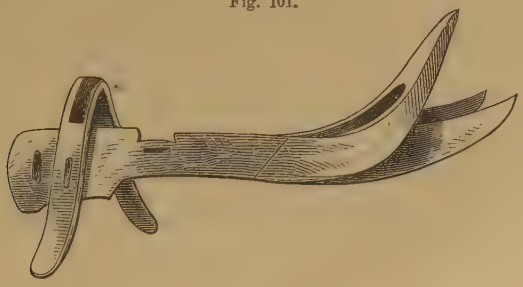


They performed the service required, and returned within forty-eight hours. The following day the light cavalry, whose saddles were the same as those used in the British service, reported thirty sore backs; the lancers not one. The saddles of the latter had all stuffed panels like those of the officers. They cost more money, but there were no sore backs, and the superiority in the riding of the men was remarkable." This

saddle is found in every variety of fashion; for light horse, however, it generally resembles that represented in Figure 100.

This saddle, which is a modification of Captain Nolan's first invention, also represents his mode of carrying the carbine, which is a decided improvement. A holster, about fourteen inches long, bell-mouthed, like a tube, and open at the bottom, is fastened below the off wallet, pointing to the shoulder of the horse. The carbine is pushed through and fastened to the pommel of the saddle by a strap of leather about a yard long, which also serves as a sling for the carbine when dismounted. The original saddle, as proposed by Captain Nolan, is somewhat different from the above; its frame is represented in Figure 101, and is thus described by him: "The tree is constructed to combine the advantages of a hunting saddle with the simplicity of the Hungarian troop saddle. The sideboards are cut away under the man's legs; they thus spread out under his seat, and are feathered and brought well off the horse's back in rear. The hind fork is broad at the base, where it joins the sideboards, and is bevelled off to add length to the seat. The front fork is constructed with a peak and with points to give the tree a firm hold on the horse's back, and prevent it from turning round, as well as to bring the man's bridle hand low.

Fig. 101.



Both forks are strengthened with iron plates. The holes cut for the stirrup leathers leave a whole back, to prevent the

stirrup leather from bulging and embedding itself in the panel and pressing on the horse's back.

"Over this tree a seat of blocked leather is stretched, like that of a hunting saddle, and fastened with screws to the fork.

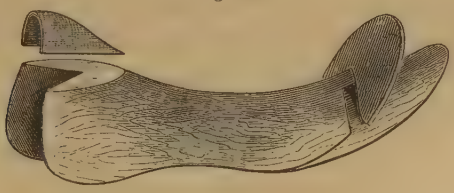
Fig. 102.

For pads, three slips of felt are slipped into a cover of serge and put on to the sideboards with leather pockets; more of these slips of felt can be put in, should the horse fall off in con dition, or they can be taken out, should the horse put up con dition; and thus the saddle always rides even, and the tre never requires to be altered. The saddle cloth is cut to fit th horse's back, and to the outline of the saddle. It has pocket for the points to fit into, and is made of felt one inch thick, t protect the horse's back, absorb the perspiration, and preven the edges of the pads from getting hard, and occasioning sor backs." Captain Nolan prefers his troop saddle to be mad

without skirts or flaps. "Leather flaps," he says, "are slippery, and do not give a firm hold to the leg; whereas, take them away altogether, substitute a double felt saddle-cloth cut square, and the man will have a stronger seat; the horses will be more under control on that account, as well as because they feel and must obey, more quickly, the pressure of the rider's legs." Figure 102 represents this saddle without wallets, shoe cases, and valise, which are put on in the same manner as in Figure 100.

The great objection to all these saddles is their want of solidity. An accident, a fall, or any shock is apt to break or injure the woodwork. Leather seats, of whatever construction, are affected by heat and moisture; they yield and stretch in various ways, and thus every saddle, after a little wear, acquires a different seat, often very incommodious to the rider, and always causing expensive repair. All this is obviated in the invention of Captain Cogent, director of the saddle factory at Saumur, in which the tree and seat form one solid body, and which, by the simplicity of its construction, is cheaper, stronger, and more durable than any now in use in the European armies. The tree is cut out of a single piece of white poplar, to which the pommel and cantel are added, as in Figure 103, the grain running across the tree. The whole is covered with a wet raw hide, glued on and sewed at the edges; no iron bolts or fast-

Fig. 103.

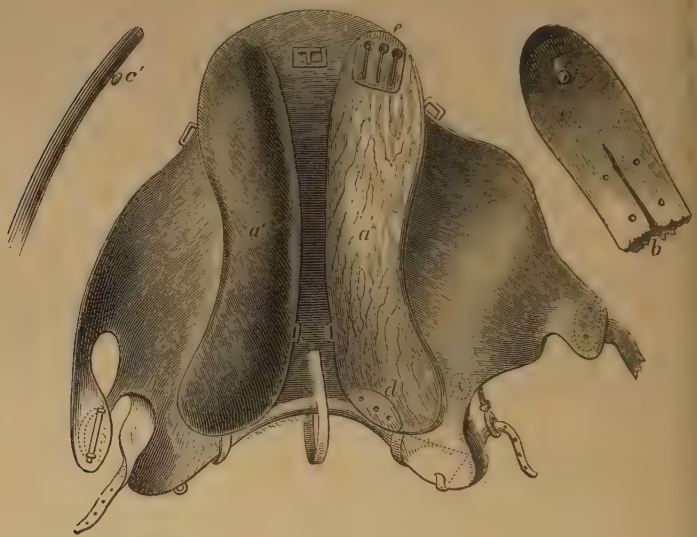


enings of any kind are used. One might suppose that this soft wood would scarcely be strong enough for the purpose; but

experience has proven that when nails and screws are not used, the poplar, which is lighter, more abundant, and less costly than any other wood in Europe, and which, moreover, is worked with great facility, and yields to a shock without breaking, is a most excellent material for saddle trees.

The most important feature of this saddle is the ease of adjustment, by which a single size may be used for all horses, or for the same horses as their condition changes. The manner

Fig 104.



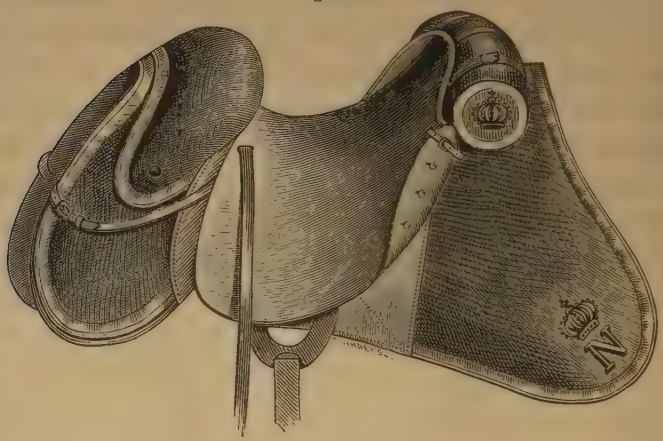

in which this is effected is shown in Figure 104, which represents the under surface of the saddle. In this sketch, *a* is the bare wooden side, and *a'* the same, covered with its panel, which consists of a strip of cork about four inches broad, half an inch thick, and as long as the side of the saddle to which it is attached. The corken strips are covered with thick felt on the side toward the saddle; a longitudinal slit, *b*, being left in the leather for the insertion of hair, wool, moss, or other good packing material, to increase the thickness of the strips or

modify their bent. The strips are attached to the saddle by means of small pins with heads, shown in *c* and *c'*; these are inserted in the holes in the iron plate *e*, and run forward into the slots; the pins at the other end of the straps have holes through the neck in lieu of heads, through which keys are passed after being inserted in the plate *d*, in order to keep the strips firmly in position. For a small horse, the pins are placed in the holes nearest the axis of the saddle; for a large one, in the outside holes; if a horse is narrow in the withers and broad at the loins, the pins are then placed in the inside holes in front, and in the outside holes behind, and vice versâ.

The tree is covered with brown leather, and has the ordinary skirts which are sewed to the girth. The girth is of black leather, and consists of two parts. The upper one is four inches broad, passes over the tree beneath the cover, and projects equally on either side below the bars; at each end of it is an iron pin with a brass roller. The other portion of the girth is a single strap three inches broad, with a large buckle at one end, and a tongue at the other. This tongue is passed downward below the roller on the near side of the horse, then upward through the roller on the off side, and is buckled on the near side. The crupper is attached to the centre of the tree by a buckle which regulates its length. The saddle blanket, which is also the horse cover, is of thick felt cloth; it is attached to the pommel by a small strap passing through holes in the blanket, which is thus prevented from slipping back, and at the same time is so raised as to open a channel for the free circulation of air over the horse's spine. The valise is shaped on a form hollowed out, and covered with stiff leather where it crosses the spine, and rests on the prolongation of the tree, so that it can nowhere touch the horse's back. There are pockets on the ends of the valise for the spare horse shoes and nails. The pouches are as usual; the holster is of wood,

covered with raw hide, and is set inside of the left pouch. Like the valise, these can be detached from the saddle, and thus the trooper can do all his packing in his quarters. As the full shabrack is a source of constant discomfort to the soldier, and, moreover, requires a surcingle, which is apt to displace the stirrup and prevent the rider from bringing his heels to the horse, Captain Cogent dispenses with it, but has a cover for the holsters, and one for the forage bag, of which, indeed, it forms the outside; see Figure 105. These pieces are not used in ordinary manœuvres, but only on reviews and on the march.

Fig. 105.

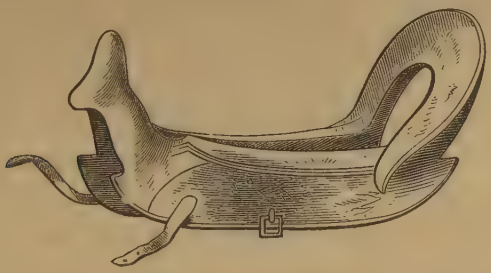


The forage bag, lined with Russia leather on the side of the horse to prevent his sweat from penetrating, and externally concealed by its felt cover, is suspended over the prolongation of the saddle tree, and opens behind the leg of the soldier, who thus, without dismounting, has ready access to it. This saddle is one of the best in use. It is light, solid, and durable; it may be adjusted to fit any horse; it affords a firm and uniform seat to the rider, and gives him easy command of all his equipments, which are well protected, well distributed, and firmly

held together. It has, moreover, a very neat appearance, and is especially valuable for its light weight, which is fifteen pounds less than any other saddle used in the French service.

The Spahis use the Turkish saddle, such as is now common among all oriental nations, and whose tree is represented in Figure 106. It consists of two bars of olive wood, united by a cantle and pommel of the same, the latter made from a naturally forking branch, and the whole covered with raw hide applied when wet, and sewed with thongs of the same material. The bars are rounded at the upper surface, where they remain three inches apart and form the seat. The French cover it with a padded cushion, but the natives prefer it bare. The hardness of the seat, which some account objectionable, with others constitutes its merit, as it prevents chafing, and those injuries that are caused by a soft seat. Hunters, postilions, and all who are much on horseback, are aware of this, and always use saddles with hard seats. The only serious complaint made by European soldiers against the Turkish saddle, is the extravagant height of its pommel and cantle. Though no metal is

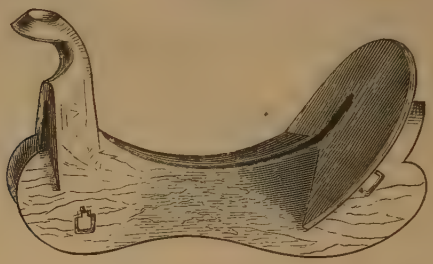
Fig. 106.



used in its construction, and from its shape it would appear rather fragile, it is extremely solid, and is rarely out of order. It was in use long before the Mohammedan epoch, and is palpably the parent of the Hungarian saddle, and indeed of many others.

This parentage is still more clearly marked in the Mexican saddle, of which Figure 107 represents the tree, and Figure 108 the same, covered with its rich housing. It is this, which in all its varieties is most extensively used on the American conti-

Fig. 107.



nent, where it was first brought by the Spaniards, who derived it from the Moors. Its construction is very similar to that of the Turkish saddle; the pommel is still higher, but the cantle somewhat lower. The seat, which is cushioned and often elegantly adorned by the wealthy, is, after the Turkish fashion, used bare by the great mass of the people. The saddle is placed on a small blanket, or on a kind of moss matting woven by the Indians, and which is said to be very good. With this protection, the Mexican will ride his horse for long distances without galling his back, wringing or wounding him. It always lies smooth, can easily be washed, dries very quickly, and absorbs the perspiration, which, from its open texture, is at once evaporated.

A modification of the Mexican is the celebrated McClellan saddle, now generally introduced into the United States service, and spoken of in the highest terms by all who have used it. In form, the tree is essentially the same as that of the Mexican saddle, see Figure 109; only the pommel, instead of being high, and fashioned out of a naturally forked joint, is made of two pieces framed together at the top, and resembles somewhat

the pommel of the saddle à la royale, or rather that of the old French hunting saddle. The cantle, which is also made of two

Fig. 108.

pieces framed and glued together, is, like the pommel, of beech wood. Both are glued to the side bars, which are of poplar, to which they are additionally secured by two rivets and four nails. The tree, like the former, is covered with raw hide, put

on wet, and sewed with thongs of the same, and held in place by stitches through the wood, where the pommel and cantle are joined to the side bars. The seams run along the edges of the side bars, where they cannot chafe horse or rider. There are three sizes of trees, differing in the length of the seat; out of every hundred made, fifteen are eleven inches long; fifty, eleven and a half; and thirty-five, twelve.

Fig. 109.

This saddle has skirts or flaps of thick harness leather, fastened by screws to the side bars; see Figure 110. The stirrups are made of a bent piece of hickory or oak, whose ends are separated by a transom, and fastened with two iron rivets. These stirrups have hoods of stout leather riveted to the wood, leaving six inches room for the foot. In great heat or cold, they are superior to any other. Two girth straps pass over the pommel and cantle arcs, to which they are fastened by four copper rivets, and to the side bars by four brass screws; their ends are sewed into the curved part of D-rings, the straight side of which receives the girth billets. The girth is of blue woollen webbing, twenty-one inches long, and four and a half wide. This saddle has no pistol holsters, as the soldier carries his revolver on his person. Instead of a valise it has two leather saddle bags sewed to a seat, which is pierced with a hole in the centre to fit the saddle bag stud behind the cantle. They are kept steady by being buckled to the rear edge of the skirts. Three mortises are cut in the cantle and one in the

upper part of the pommel, which is also provided with two foot staples for cloak straps. The crupper is attached to the side bars. There is no breastplate or false martingale. The saddle is used with a blue woollen blanket.

Fig. 110.

A saddle so extensively used could not fail to engage the attention of inventors, who, designing further improvements, have devised various changes and modifications, which have not always bettered the original. Most of these intended improvements are nothing but old contrivances revived, and in no instance have we seen or heard of any invention involving a

new principle, except, perhaps, one recently brought out by Messrs. Peck Brothers, saddlers in New York; and even in this case, we are by no means sure that a careful research will not discover its prototype among the saddles of the middle ages, or even of later times. The plan consists in the application of two spring-steel guards, slightly padded and covered with leather, and so placed as to brace the thighs of the rider, and thus, as it is claimed, prevent him from being thrown forward by any motion of his horse, however violent; see Figure 111. There has not yet been time to thoroughly test the merit of this arrangement, but we are probably right in saying that the invention is all that it professes to be, namely, an excellent safeguard against injury from being thrown forward upon the pommel of the saddle, or out of it altogether; and although we rather agree with those who think that more dependence should be placed on good horsemanship than on contrivances of this kind, we nevertheless believe that to the inexperienced, the old, and the weak, a saddle thus arranged may be of great service, as it is calculated to inspire confidence, and actually secures a firmer seat. But among men who have ridden in the ranks, and who have felt the agonizing pains occasioned by pressure or friction against objects projecting from their neighbors' saddles, especially when moving at a rapid pace, we doubt whether the adoption of these guards will be likely to meet with much favor, even should they be proven strong enough not to rub off in the stable or on bivouac, and to resist the extra wear and tear of a campaign.

Such, in the main, are the military saddles now used here and in Europe. Though they are by no means perfect, they are all good enough, provided they fit well, and the soldiers are careful in saddling and packing. If the horse's back were a hard and unyielding substance, nothing could be easier than a perfect fit; but as it is not so, and on the contrary is composed

of parts, of which some will bear a weight with perfect safety, while others cannot endure any pressure, it is necessary, in

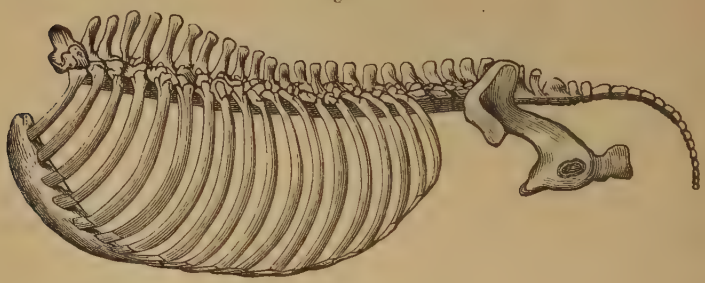
Fig. 111.

order to proceed understandingly, first to make some anatomical examination of that part of the animal which has to sustain the burden.

The spine is a chain of bones, extending from the poll to the extremity of the tail. From the neck to the haunch, it consists of twenty-three vertebræ, eighteen of which, called dorsal, compose the back, and five, called lumbar, occupy the loins; see Figure 112. At each junction of these bones is

interposed an exceedingly elastic cartilaginous substance, which readily yields, and gives way to every jar, not so freely as to occasion insecurity of connection, or cause much play between any single pair, but affording throughout the continuous series such perfect pliancy, that the rider sits almost undisturbed, however rapid the pace may be. These bones, too, are united with peculiar tenacity. The round head of each is nicely fitted to the cup of the adjoining one, and between them is the elastic ligamentous substance just described, which is so tough, that force will break the bones of the back more easily than rend the strength of the ligament. Moreover, there are ligaments running along the broad under-surface of the vertebræ, others again between their transverse processes or side projections, and others between the spinous processes or upright projections. There is, also, a continuation of the strong ligament of the neck, traversing the whole extent of the back and loins, lengthening and contracting, as in the neck, with the motions of the animal, and forming a powerful bond of union between the bones.

Fig. 112.



These provisions, however, although ample for ordinary or even severe exertions, will not protect the animal from the consequences of brutal usage; and, therefore, if the horse is much overweighted, or violently exercised, or too suddenly pulled upon his haunches, the ligaments are strained. Inflammation

follows, the ligaments change to bone, and the joints of the back lose their springiness and facility of motion, or more truly, actually cease to exist. Excessive or premature labor has left few old horses without some bones of the back or loins anchylosed, that is, united by bony instead of ligamentous matter. This seriously impairs both the lateral and vertical flexibility of the spine, without which a horse is very awkward and extremely unpleasant in his movements. Such horses are called broken-backed.

The length of the back also is to be taken into consideration. A long-backed horse will have a more elastic action than a compact short-backed one, because the increased distance between the fore and hind legs, which are the supports of the spine, will afford greater room for the play of the dorsal joints. A long spring has more pliancy than a short one, and will better withstand concussion; on the other hand, however, it is more easily bent and more liable to injury. In like manner a long-backed horse will be comparatively weak in the back, and readily overweighted. When an easy pace is aimed at, and no hard work is required, a horse of this description may be the most desirable; but for cavalry purposes, those with short bodies and broad and muscular loins, are always to be preferred.

The back of a well-formed horse is slightly depressed immediately behind the withers, and then continues in an almost straight line to the loins. This is the form most consistent with beauty and strength. Some horses are very hollow behind the withers; such are said to be saddle-backed. In some, this is natural, with others it results from overwork or overweight before their vigor had matured; but generally it is the effect of years, and many incur this deformity at the age of thirteen or fourteen, even without ever having been mounted.

This temporary or permanent deflection of the back has

prompted the opinion that, when trying on a saddle, we must be careful to leave some room both front and rear for the springiness of the spine; but this is a mistake. If the horse is placed on level ground, saddled without the blanket, mounted by his rider, and with head raised high, his back will bend, and deflect from its ordinary curve, as much as, and probably more than during any action or exertion of his own. To bring his hind legs under his centre of gravity, he must necessarily bend his spine upward as much as is required to reach the ground some distance ahead, and the greater his effort, the greater will be the curvature, as any one may notice at a race, or better still, by placing his fingers under the rear parts of his saddle, while trotting or galloping his horse at great speed. If this be not taken into consideration, the saddle, instead of bearing equally at the important moment, will rock on the horse's back, pounding and bruising it with its whole weight, augmented by that of the rider, his equipments, and the repeated shocks; or else slip forward, pinching the shoulders and pressing upon the withers, often causing dreadful wounds.

The first rule, then, in fitting the saddle is, that it should bear on the back, and not on the spine and withers, for these are parts that will not endure pressure. The next, that the saddle should everywhere have an equal bearing, neither tilting forward upon the points, nor backward upon the seat. When the saddle is on, and the girths fastened, there should remain between the withers and the pommel space sufficient for the insertion of the hand under the latter. The points of the tree should embrace the sides without pinching them, or so standing outward that the pressure is all downward and upon one spot, instead of being inward as well as downward, so as to be distributed uniformly over every portion of the part that touches the sides. Low and thick withers are most likely to sustain injury from the constant riding forward of the saddle and its conse-

quent pressure. Fleshy and fat shoulders and sides are also exposed to injury from the points of the trees pinching them, either on account of their being too narrow in the arch, or from the bearing being directly downward upon them. Injury also results from the interference of a saddle placed too far forward, with the free working of the shoulders, and the consequent friction and pinching which the soft parts undergo between the shoulder blade and the saddletree.

All this is, in some degree, prevented by the blanket, which is generally folded in twelve or sixteen thicknesses under wooden saddles, and in four or six under panelled ones. Saddle blankets ought to be of pure wool, closely woven, and of stout yarns. The white are much the best, though blue ones are generally preferred on account of their neat appearance. But, as the coloring matter used in their manufacture favors the fraudulent intermixture of poor materials, blue are generally inferior to those made of white wool. Bad blankets soon shed the long nap ; the texture then becomes hard and unyielding, tears easily, requires frequent mending, and is apt to make folds under the saddle and wound the horse. For all these reasons, felt saddle cloths are greatly to be preferred, and wherever they are used, give entire satisfaction. They are cheap and strong, easily cleaned, always assume the same folds, and can be replaced under the saddle with perfect safety by one man, even in the hurry of a surprise and in the darkness of night.

However nicely a saddle may fit, there is, nevertheless, danger of wounding a horse, unless the following precautions are observed, and which a good soldier will be careful never to neglect. In the first place, he will never appropriate to his own use the blanket which is intended for his horse, or otherwise expose it to unnecessary wear and tear. He will always clean and shake it well before saddling. He will take pains to dry it as often as it becomes wet, or fold it in such a manner as to

apply the driest part to the horse's back. The torn or mended parts he will always turn up toward the saddle, and never fold the blanket thicker in front than behind. He will raise it above the withers and spine, when the saddle is placed on it, but not yet fastened, lifting it with both hands, in front and rear, and not, as is commmonly recommended, above the withers only. In buckling the girth, he will see that nothing has caught, and that the blanket lies smooth beneath. He will always sit squarely in the saddle, and be especially careful to preserve a good seat on a long march, when fatigue might prompt him to do otherwise. At every halt he will examine his saddle and packing, and never fail to make the necessary rectifications.

We may sometimes see new levies of infantry that have not yet learned the art of packing and carrying their knapsacks, suffer much from want of system and skill in this respect. They look like peddlers under their burden, and at the first encounter with the enemy are apt to cast away whatever may impede their movements. But the poor horse has no such privilege, and must simply carry what is laid upon him. Hence it is of the utmost importance that nothing be given to the man that is not absolutely necessary for himself and beast; that every article of his equipment be carefully planned, in respect of utility, solidity, bulk, and weight, and have its assigned place upon the saddle, where it is of easiest access to the rider and of least discomfort to the horse. All this, once determined, should be considered law, never to be disregarded. Once a week, at least, one horse per platoon should be brought out fully equipped, and in the presence of all, every piece should be taken off in a prescribed order, and put on again according to regulation; thus the greatest uniformity would be obtained, and the art of packing and saddling be taught both theoretically and practically to every man in the squad-

ron. On the march, the equipments should be frequently inspected, every unauthorized article ordered to be thrown away, and the offender severely punished. Troops would then have a better appearance, and sore backs would become much less common than they are in regiments where these details are neglected or imperfectly attended to.

In spite of all precautions, however, accidents may happen. When the saddle has been suffered to press long upon the withers, a tumor will be formed, hot, and very tender. In its first stages it may often be dispersed by cooling applications of fresh water, vinegared or salted, or, better still, by arnica lotions; but if the swelling should not subside, and especially if it should become larger and more sensitive, warm fomentations and poultices, and stimulating embrocations should be diligently applied in order to hasten the suppuration of matter. As soon as this can be clearly detected, a seton should be passed from the top to the bottom of the tumor, that all corruption may be voided, and continue to be discharged as it forms. It is better still to use the knife at once and cut the abscess open to the very bottom, for, unless every sinus in connection with it be entirely exposed, the purulent matter will spread in many directions, and consequently the disease will daily involve a greater extent of living tissue. A free use of the knife is, therefore, the shortest and the safest cure, which is further completed by daily dressings with arnica or calendula lotions, made in the proportion of one ounce of tincture of arnica or calendula to a pint of soft water.

On the other parts of the back, tumors and very troublesome ulcers may be produced by partial and undue pressure of the saddle. They are called "warbles," and when they ulcerate they frequently become "sitfasts." If a horse is subject to these, the saddle should remain on him two or three hours after he has returned to the stable. It is only for a certain time,

however, that this treatment will succeed, for by the frequent application of the pressure, the skin and the cellular substance are injured, and a permanent sore or tumor of a very annoying description is formed. The heart of the sore gradually loses its vitality; a separation takes place from the surrounding integument, and a wafer of dried and hard skin remains in the centre. No effort must be made to tear or cut it off, but stimulating poultices or fomentations should be applied. If these fail, a mild blister will cause a speedy separation, and the wound will then readily heal under the influence of turpentine dressings, more or less stimulating, according to circumstances. Saddle galls are tumors, and sometimes only galls or sores, arising from the presssure and chafing of the saddle. They differ little from the warbles, except that a separation from the dead core seldom occurs, and the sore is larger and more variable in its form. The application of cold water, salted or vinegared, or mild arnica lotions will generally remove them. But, however slight the injury may be, it is always important to ascertain the cause of it, in order to prevent its recurrence, by greater care in saddling, or by making the necessary alterations in the saddle.

The chief imperfection of the headgear, like that of the saddle, is excessive weight without corresponding solidity. Its different parts consist of a bit and snaffle with their headstalls, and a halter, each of which was formerly complete in itself, and often very clumsily adorned. The present tendency is to make everything as simple as possible; to remove all superfluity, and by giving additional strength to each piece, to increase the solidity of the whole. Special facilities are provided for rapid bridling and unbridling, for, if these operations are slow and difficult, the soldiers cannot feed their horses in the neighborhood of the enemy, and so, during a campaign, their condition must suffer seriously. The Russians

were the first to introduce improvements in this respect. Their bits are made with a hook and link, as in Figure 114, *a'*, and by lifting the ring, they can be taken from the horse's mouth without removing the bridle. The bridle is also improved. Instead of separate curb and snaffle headstalls, there is but a single crownpiece, to which the cheekpieces are buckled, each made of a single strap, and split at the bottom to receive the rings that hold the bits. A spare curbchain is placed on the top of the crownpiece. Similar improvements have been introduced in the cavalry headgear of almost all the German states; but there, as well as in Russia, they generally retain the plaited cords of leather crossing the face diagonally from the browband to the noseband, and other traditional ornaments, difficult to keep in order, and of doubtful taste.

Fig. 113.

The bridle proposed by Captain Nolan, Figure 113, is free from all these faults, and is also much more simple. It has only four buckles, viz., two on the headcollar, see Figure 117, one on the snaffle headstall, see Figure 116, and one on the curb

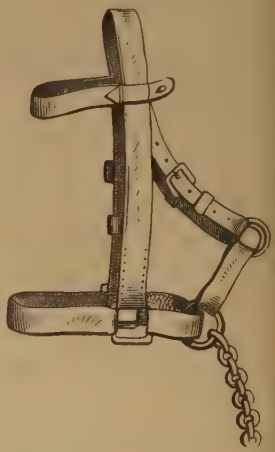
headstall, see Figure 115. As in the Russian bridle, the curb, the snaffle, and their headstalls, are provided with hooks and links, by means of which the bits can be slipped from the horse's mouth for the purpose of feeding, without removing the bridle; see Figure 114, *a* and *a'*. The snaffle has half horns to prevent its being drawn through the mouth. The headstalls are fastened to the collar by a strap and button on the brow-band, see Figure 117; the reins of both bits are sewed to the rings.

Fig. 115.

Fig. 114.

Fig. 116.

Fig. 117.



This again has been greatly improved by Captain Cogent, whose bridle is represented in Figure 118. It consists of a single crownpiece to which are buckled the cheekpieces, each terminated by a double ring to sustain either the curb or snaffle-bit, the latter serving as a watering bridle. When not used for this purpose, it is placed on the crownpiece, the horse being bitted with but one bit at a time. The curb is very

peculiarly constructed. The mouthpiece, see Figure 122, is longer than the interval between the branches, whose lower part is open, to allow the mouthpiece to move up and down. Outside of the branches, this mouthpiece has a projection with a neck and head; the double ring at the end of the cheekpiece goes over this neck, and keeps the mouthpiece in its proper position. By lifting these rings, the mouthpiece is freed, and may be slipped down to the bottom of the branches, so that the horse can feed freely. Instead of a curbchain it

Fig. 118.

has a leather strap, which, when once buckled at its proper length, is not unbuckled again. The headstall is fastened to the halter on the neck, by a strap and leather button. When hobbles are used, the halter is, of course, dispensed with. Captain Cogent recommends that the bridle be made of Russia-leather, or of leather having that color, for it is easily kept clean by sponging, remains supple, and saves the man from soiling his hands and everything he touches, with blacking.

The bridle used by the United States cavalry consists of a

crownpiece whose ends are split, forming a cheekstrap and throatlash on the one side, and a cheekstrap and throatlash billet on the other. The lower end of the cheekpiece is provided with chape and buckle to hold the bit. The ends of the browband are doubled and sewed, forming at either end two loops for the cheekpieces and throatlash to pass through. There is no headstall for the snaffle, which is suspended to the halter by two chains and toggles. The halter consists of a noseband, cheekpieces, and collar. The cheekpieces are joined to the collar by cheekrings, which allow the former to assume an upright position, when supporting the snafflebit, as in Figure 119, and the latter to be tightened in the stable or at bivouac, on horses that have the knack of slipping their halter. There are four varieties of curb bits, differing in the arch of their mouthpiece, and in the distance from the mouthpiece to the eye for the cheekstrap. The severest of these bits has an iron ring instead of curbchain, as in Figure 117, which represents a genuine Turkish bit, very much resembling that used also by the Mexicans. The branches are all alike below the mouthpiece, and in shape resemble those of the bit proposed by Captain Nolan. The reins are sewed fast to the rings of the bit.

Referring our readers for the use of the bridle to the various treatises on horsemanship, we will here briefly observe that the curb bit is always a lever, in which the inside of the mouth is the fulcrum, while the increase of power afforded by this mechanical arrangement is brought to bear upon the outside of the jaw through the medium of the curbchain. The leverage may be long or short, but the principle is the same in all cases, varying only in the mode of its application. In some curb bits, the mouthpiece is curved in the middle, rising more or less into an arch, which is called the "port," and which presses upon the roof of the mouth when the lever is pulled. Persons who regard the horse as a kind of wild beast, that can be governed

only by force, insist upon having a noseband of leather tightly buckled around his jaw, that nothing of his sufferings may be lost; but this method is as useless as it is cruel. At first the pain thus inflicted is indeed excessive, but in course of time,

Fig. 110.

the parts so pressed upon become callous, and the mouth is irretrievably spoiled. Thus a rider with a heavy hand, may begin with a mouth which is too light and sensitive, and in a few weeks he may find it so dull as to be quite unpleasant, in spite of a tight curbchain and noseband, a high port, and a long lever. These should all be adjusted with a view to as much ease and comfort as will comport with the proper control of the horse, and no more use should be made of them than is actually necessary.

To complete our sketch, we will add a few models of cavalry bits, such as are now generally used in the various armies in Europe. Some twenty years ago, almost everywhere the curb bit had straight branches, as in Figure 120, with a small hole at the lower part to admit a narrow strip of leather which is passed through the central ring in the curbchain, in order to prevent the horse from seizing the branches with his lower lip, as he is apt to do, to escape the action of the bit. It is to obviate this, that in many instances they have returned to curved branches, and those which have the curve backward, as in the United States' service, are evidently better than those bending forward, especially if for the sake of solidity the latter have to be strengthened, as in Figure 121, by parts which can be as easily taken hold of as the straight branches. Captain Cogent's bit, described in page 509, and illustrated in Figure 122, admits only of straight branches, owing to its peculiar construction. The Pelham bit, which lately has been tried also with cavalry, combines the snaffle and curb, and requires no addition of the former to make a double-reined bridle. The mouthpiece is jointed in the middle like a snaffle, and, like it, has a ring at each end for the snaffle rein, while the curb rein is attached to the end of the lever, as in the ordinary curb bit; see Figure 123. This is an extremely useful bit for general purposes; but when employed in the army, it requires an extra bit for the watering bridle, which, as in Cogent's bridle, is then generally carried on the crownpiece. The Hanoverian Pelham bit is similar to the above in principle, but it has two joints in the mouthpiece, united by a high port, and the sides of the mouthpiece are covered with rollers, which are supposed to increase its severity. The Turkish bit, represented in Figure 124, consists of a straight mouthpiece and curved branches, generally having at their lower end slender chains, six or eight inches long, to which the reins are fastened in the usual man-

ner, that the horse may be watered over the bridle without danger of wetting and injuring the reins. Instead of curb-chain, this bit has an iron ring attached to an upward projection, from which it gradually increases in thickness, that the heaviest part which bears on the jaw, may act as mildly as possible, for which reason it is generally covered with leather, felt,

Fig. 120.

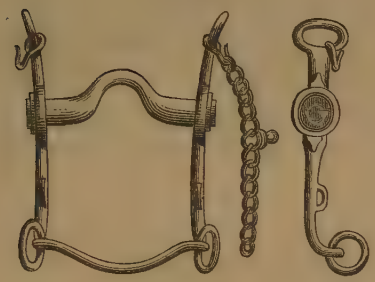


Fig. 121.

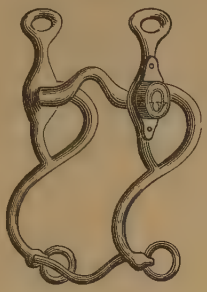


Fig. 122.

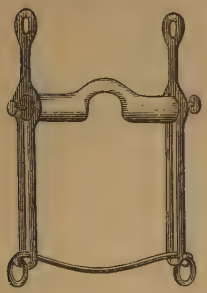


Fig. 123.

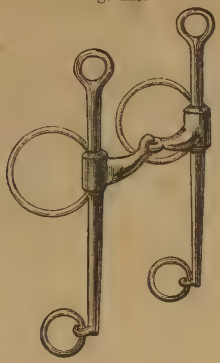
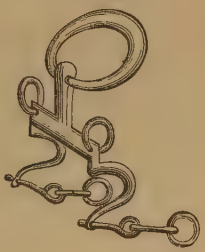


Fig. 124.



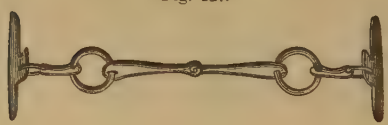
or some similar material, especially for young horses. As has been remarked above, the same kind of bit is used in Mexico, and has been introduced also in the United States' service for hard-pulling horses, for which it is said to be very useful. It is an extremely severe bit, and in inexperienced hands a most dangerous instrument.

There is an almost endless variety of snaffles as of curb bits, though only a few are suited to cavalry. They differ essentially from curb bits in the absence of all leverage, and consist of rings, one on each side of the mouth, connected by a mouthpiece, jointed or not; when unjointed, it is commonly curved slightly forward, and assumes the name of straight bit. The latter, being never used with the curb bit, but always alone, is of no avail for cavalry, except perhaps in the riding school for training, or as a watering bridle; for which latter purpose, however, it is now everywhere superseded by a heavy single or double jointed snaffle, whose rings are prevented from slipping through the mouth, by light bars, projecting up and down, as

Fig. 125.

Fig. 126.

Fig. 127.



in Figure 125. The snaffle used with the curb bit has no such projections, and its mouthpiece is much lighter than that of the watering bridle. According to the mode of suspension, it has only rings to be buckled to the cheekpieces; or rings provided with links, as in Figure 127; or with chains and toggles, as in Figure 126. Generally, snaffles have but one joint; but, as by hard pulling the joint projects against the roof of the mouth, the double-jointed mouthpiece is deemed preferable.

We regret that, for lack of room, we cannot enlarge more fully upon a subject so vitally interesting to the cavalry soldier, as all must be that has relation to his horse. But as elsewhere in the course of this work, so here also we are obliged to confine our remarks to suggestions, important facts, and leading principles. We trust, however, that we have said enough to point out the peculiar kinds of knowledge requisite for the efficient management of cavalry; to make it plain that this branch of a military establishment cannot be improvised in the hour of need; and that for this reason it should at all times be kept as complete and as well instructed as possible. It is true that it is costly, of no great service in time of peace, and in war only of occasional avail; but so overwhelming and decisive then, that its results, however rare, will always abundantly repay the sacrifices which its liberal maintenance may impose upon a nation.

THE END.

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